INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC
GUTTA-PERCHA

Reg. United States Pat. Off. Reg. United Kingdom.

Published on the 1st of each month by

THE INDIA RUBBER PUBLISHING CO.

No. 25 West 45th Street, New York.

Telephone—Bryant 2570.

CABLE ADDRESS: IRWORLD, NEW YORK.

HENRY C. PEARSON, Editor

Vol. 54 SEPTEMBER 1, 1916 No. 6

SUBSCRIPTIONS: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft or Postoffice or Express money order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

DISCONTINUANCES: Yearly orders for subscriptions and advertising are regarded as permanent, and after the first twelve months they will be discontinued only at the request of the subscriber or advertiser. Bills are rendered promptly at the beginning of each period, and thereby our patrons have due notice of continuance.

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Entered at the New York postoffice as mail matter of the second class.

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PURE RUBBER AND THE BARKLEY BILL.

A BILL introduced by Congressman Barkley "to prohibit the manufacture, sale or transportation in interstate commerce of misbranded articles; to regulate the traffic therein, and for other purposes," has passed the House of Representatives recently and now awaits action by the United States Senate. It differs from previous pure goods acts in that it seeks, not to compel manufacturers to list the ingredients upon their products or packages containing them, but to impose penalties upon those who misbrand their goods. By this is meant placing upon a product "any word, statement, symbol, design, device or indication which is false, fraudulent, deceptive or misleading . . . . as to the materials or substances of which it is composed." A further provision makes it unlawful to publish, issue or circulate "in any newspaper, magazine, book, pamphlet, circular or other publication or advertisement any false, fraudulent, misleading or deceptive word, statement, representation, symbol or device as to the matters or things stipulated" in the act.

While this appears to be fair legislation, it can hardly be hailed as advantageous to rubber manufacturers, some of whom use the words "pure gum," "pure rubber" or "pure Para" in describing their products, while others claim that their goods are "all rubber," or "contain nothing but pure rubber," when every rubber manufacturer knows that substances other than pure gum are necessary to the manufacture of all rubber articles. Should this bill become law it would make amenable anyone using phrases of the character quoted in publicity work of any kind, and despite the fact that the rubber trade understands the technical meaning of such terms as "pure gum" or "pure rubber" the manufacturers using them could be indicted under the provisions of this act and subjected to the expense of defending themselves, were dissatisfied purchasers or competing firms disposed to enter complaint against them.

The rubber business is not exceptional in that some of its nomenclature may be misleading. "Solid gold" jewelry contains a smaller or larger proportion of alloy; also "all wool" fabrics frequently contain shoddy and are not less satisfactory in wearing quality than others similarly designated but which contain a certain proportion of cotton. It is admittedly difficult to frame any law incapable of imposing hardship upon someone, and while the Barkley bill is right in principle, it may hamper manufacturers who use perfectly well understood terms in describing, labeling and advertising their products.

We do not fear the effects of this bill as far as the rubber trade goes, for its nomenclature is elastic and easily adjusted to new conditions. But to the class of men to whom the framer of the bill belongs, is it not a menace? A Congressman is, of course, a "product." If, therefore, any word such as "statesman" be placed upon him, and it be "false, fraudulent, or misleading" may he not be indicted and suffer the very penalty intended for the merchant?

RUBBER STRATAGEMS OF THE BLOCKADE.

IN all times blockade running has developed superlative ingenuity, and the present world conflict is no exception. England was quick to appreciate the value of her great navy and to realize that the most effective way to counter Germany's military preparedness was to use it to suspend German shipping, close German ports to the world and thus cut off all outside sources of important raw materials, such as rubber, copper, cotton and similar commodities not found or not produced in sufficient quantity within the borders of the Central Powers.

During the early months of the war considerable quantities of these materials were purchased by German agents in America and elsewhere and consigned to similar agents in the neutral countries of Europe, whence they subsequently found their way into Germany. But this subterfuge was not long permitted to continue after these neutral countries had exceeded their normal yearly importation. The contraband list was extended to embrace all these commodities, and cargoes including them were seized and in due course confiscated to Allied use by prize court proceedings. Meanwhile a constantly increasing shortage rendered the demand more urgent, and finally German agents found it necessary to resort to stratagem with all the ingenuity and resourcefulness characteristic of their race. That they so rarely succeeded, however, indicates no lack of initiative on their part; indeed, their adroitness was of an order to elicit admiration, but the examining officers of the British navy quickly developed a correspondingly keener intuition and an unyielding incredulity that brought many strange things to light in their thorough search of all vessels bound for European ports.

Obviously rubber lends itself very readily to clever faking and so has become the chief masquerader among contraband goods. It has been found in the guise of rusty iron hoops, toys, sponges and the inside filling of various articles, from tinned meats to broom handles. On one ship 4,000 packages, supposedly bread for British prisoners in Germany, were found to contain a pound of rubber each. Another vessel carried 17 tons of coffee beans in 250 sacks in which large quantities of crude rubber were concealed. One item of a miscellaneous cargo consigned to a neutral port consisted of many sacks of onions of excellent appearance, but when the examining officer selected one at random and dropped it on the deck it bounded back into his hand. Only a few, carefully spread over the top of each sack were genuine; the others had been made of rubber, and remarkably realistic imitations they were, too. Far more ingenious, though, were many cases labeled "pure honey." These were filled with the familiar little square boxes of comb with what appeared to be honey oozing out of it. An inquisitive sailor tasted of it, made a grimace and threw the box to the deck where it bounded about in the most surprising manner. The combs had been fashioned out of rubber and filled with some convenient smeary substance resembling honey yet not tasting like it.

Bulkheads and decks of somewhat more than normal thickness were several times found to contain contraband. In two instances, at least, it was discovered clamped to the bottom of a ship along her keel. Hollow steel masts were a subtle feature of one tramp steamer and her double bottoms were also stuffed with contraband, but these proved to be much less secure hiding places than the hollow furniture and bunks like conjurer's trick boxes which were afterward detected on an innocent looking trader. These are only a few of the many artful ruses that failed; of those that succeeded, and there were some—perhaps many, there is no record.

THE A. L. A. (THE AUTOMOBILE LEGAL ASSOCIATION) is a valuable organization; is strong, alert, and uniformly sane, but is the following, which is an official utterance, up to its usual standard?

The automobile journals and magazines are beginning as usual at this time of the year to carry a great deal of advertising space relating to tire treads or other devices intended to protect the tire, but we now feel that we can safely say that they are not satisfactory, and that the alluring advertisements referred to should not be considered.

Our experience is that rubber anti-skids prevent slipping except in deep mud or sand. While a few years ago they wore smooth after about 500 miles on the road, today they last from three to six thousand miles, when the tires become smooth.

MAKERS OF LEATHER FOOTWEAR COMPLAIN THAT DAMP weather, that for example which July and August of this year afforded in great abundance, spoils their work, as the rubber cement fails to stick. Their troubles are light, however, when compared with those of rubber manufacturers. Their work is full of building up by cementing, and prisoned dampness not only prevents proper adhesion, but results in blisters. The ideal making up room of the future will undoubtedly be supplied with air always of certain temperature and always free from moisture. This indeed is already done in dipped goods plants.

TWENTY YEARS AGO THE RUBBER CHEMIST WAS A *rara avis*. To-day he is an important, often the most important, member of the staff of experts attached to every successful rubber factory. In the last five years chemists have practically revolutionized compounding and reclaiming, and have but touched the edges of the great field of accomplishment. That they should meet and exchange views at the approaching National Exposition of Chemical Industries to be held in New York, the week of September 25, is eminently fitting, and a large attendance is assured.

THE NUMBER OF RUBBER WORKERS IN NEW YORK STATE increased 23.75 per cent in four months of 1916, as against a corresponding period in 1915. For the same term the wage increase over that of 1915 was 36 per cent.

Plantation Rubber in Cochin China.

By Lawrence P. Briggs, United States Consul at Saigon, French Indo-China.

THE production of plantation rubber is a comparatively new industry in Cochin China. Several years after Ceylon, Java, Sumatra and the Federated Malay States were producing rubber in considerable quantities, it was thought that Cochin China lacked the requisite soil and climate for the successful cultivation of the rubber tree. The first real plantation was established in 1900. In 1908 the first plantation rubber was exported from Saigon. About this time several large plantations were established. In 1915 the port of Saigon exported over 350,000 kilos of plantation rubber, with a customs valuation of over $300,000 (United States currency), but with a market price nearly twice that figure. On the first of January, 1916, there were in Cochin China about 100 plantations, with a total of nearly 70,000 hectares and over five million trees, of which only about 400,000 have yet been tapped. It needs only the normal exploitation of the trees already planted to make plantation rubber in 1920 second in value to rice among the exports from Saigon.

WILD RUBBER.

For many years Saigon has exported native rubber—years ago in much greater quantities than now. This rubber was brought from the forests of Cambodia and Laos by natives, who obtained it from several varieties of wild trees and tropical lianes, especially the *Ecdysanthera glandulifera*. These lianes are tapped by making, with a knife or other sharp instrument, longitudinal slits in their vine-like trunks, in which the latex or sap is coagulated. After coagulation these strips of rubber are smoked on the tree, then rolled into a ball. This trade has declined greatly during the past few years, partly because the easily available trees were nearly ruined during the years of high price and partly because from 1912 until recently the price has not been sufficiently great to make it worth while to transport this product the necessary distance. The exportation of native rubber during the years 1899-1915, inclusive, has been as follows:

Year.	Kilos.	United States Currency.
1899.....	1,513	$722
1900.....	39,491	37,688
1901.....	76,326	97,688
1902.....	14,767	18,525
1903.....	7,692	9,649
1904.....	12,848	16,118
1905.....	37,724	47,325
1906.....	57,443	84,607
1907.....	34,137	42,825
1908.....	10,414	$13,057
1909.....	3,085	2,679
1910.....	9,125	7,925
1911.....	67,995	59,053
1912.....	70,052	60,841
1913.....	63,224	54,910
1914.....	7,233	6,282
1915.....	5,778	5,018

MAP OF FRENCH INDO-CHINA.

BEGINNINGS OF PLANTATION RUBBER, 1880-1907.

There is some dispute about the exact time and place of the introduction of plantation rubber (*Hevea Brasiliensis*) into Cochin China. Old pioncers recall that a few rubber trees were planted in the Botanical Gardens at Saigon in 1880 or 1881, but these trees seem to have disappeared within four or five years from that date. According to the best authorities the rubber tree was permanently introduced into Cochin China in 1897 by M. Raoul, chief pharmacist for the Colonies. During a visit to Ceylon this official sent to the Saigon Botanical Gardens several thousand seeds. From these seeds about 1,800 plants appeared in 1898. In October of that year, 1,000 plants were sent to the government experimental station at Ong-Yem in Cochin China, 200 were sent to Dr. Yersin, director of the Pasteur Institute at Nha Trang in southern Annam, and a few hundred were distributed among various planters of Cochin China.

The rubber plantation at the Ong-Yem experimental station still continues. Less than 400 of the original trees survive, but new plantings on this and the adjoining plantation of the House of Correction raise the present number of trees to 16,500. The joint production of these two plantations for 1914 and 1915 is said to be about 3,700 and 6,000 kilos, respectively. Dr. Yersin's plantation at Suoi Giao near Nha Trang is more extensive. This plantation now consists of about 60,000 trees. Its production during the various years since tapping began is shown in later pages of this report.

The next year (1899) several thousand seeds were imported from Ceylon and the plants were distributed among various planters. The first successful plantation was established by M. Francois Belland, at that time chief of the Saigon police. In 1900, this colonist planted 600 trees on his plantation at Phu Nhuan, about three miles from Saigon. The next year he planted 4,500 more, and in 1902 another 9,000. This plantation, with that of Hanh-thong-tay a few miles away, purchased later by M. Belland, contains about 25,000 trees. The first tapping, in 1908, yielded about 1,500 kilos of rubber. This amount has been gradually increased, especially during the past two or three years. Nearly all the plantation rubber exported from Saigon before 1913 came from the Belland plantations.

DEVELOPMENT OF RUBBER PLANTATIONS, 1907-1916.

The plantations at Phu Nhuan and Ong-Yem were located on

Kilogram = 2.2 pounds. Hectare = 2.47 acres. Franc = 23.8 cents. Piastre = about 50 cents.

the narrow strip of gray soil which marks the first elevation from the delta-lands and flood-plains of which lower Cochin China is composed. Above this gray strip lies a wider strip of red soil of volcanic origin and of remarkable fertility and depth, reaching in some places 20 or 30 feet. This strip, about 35 miles wide, begins in the upper end of the province of Baria and extends 60 or 70 miles north-northwest across the provinces of Bien Hoa and Thudaumot and into the protectorate of Cambodia.

In 1907 and 1908 two companies were organized to make more ambitious attempts to cultivate *Hevea Brasiliensis* on plantations located within the red soil area. In the former year the Société Agricole de Suzannah was organized with a capital stock of 2,500,000 francs, divided into 10,000 shares of 250 francs each. The same year this company planted 700 trees on their plantation near the station of Dau Giay on the Saigon-Nha Trang railway in the province of Bien Hoa, about 45 miles east of Saigon. The number of trees was increased to 45,000 in 1907, 140,000 in 1909 to 300,000 in 1910. The first tapping took place in 1912, when the production amounted to 4,480 kilos. In 1913 this plantation produced over 24,000 kilos of rubber. Since that time it has been, next to XaTrach, the most productive rubber plantation in Cochin China.

In 1908 the Société Anonyme des Plantations d'Héveas de XaTrach was formed with a capital stock of 2,300,000 francs and purchased a plantation at XaTrach, about 65 miles north of Saigon, in the province of Thudaumot. The first year 100,000 trees were planted. This number was increased to 200,000 in 1909 and 250,000 by 1915. In 1911, 540 trees were tapped; in 1912, 15,300, and in 1913, 54,000. The production of this plantation during the latter year was 25,170 kilos. It has since remained the most productive of the Cochin China rubber estates.

The years 1908 and 1909 witnessed the creation of two large plantations on the gray soil strip near Saigon. In the former year the Société des Héveas de Tay Ninh planted about 8,500 trees in the province of the same name, about 40 miles west of Saigon. In the latter year the Société des Héveas de Tan-thanh-dong planted about 55,000 trees on their plantation in the province Giadinh, a few miles distant from the capital. Although the development of these plantations has been slower than that of those in the red-clay strip, the figures given in later pages of this report show them to be among the most important plantations of the colony.

The four following years (1909-1913, inclusive) saw the formation of many companies and the rapid absorption of the best available lands for rubber cultivation. The most important of the companies formed at this time is the Société des Caoutchoucs de l'Indochine. This company, controlled by the Banque de l'Indochine, has a capital of 4,500,000 francs and its headquarters at Paris. Its plantation is located at Loc Ninh in the red-soil district, a few miles beyond Xa Trach. Besides being considerably the most ambitious attempt at rubber cultivation in Cochin China, this plantation is notable as being the first successful attempt to interest, on a large scale, the capital of the mother-country, the earlier plantations being controlled almost entirely by local capital.

By the year 1913 the rubber industry can be said to have become firmly established in Cochin China. By this time the total surface planted to rubber trees amounted to about 14,000 hectares, the number of trees planted was over 4,000,000 and the capital invested not less than $5,000,000. In this year the older estates were beginning to yield and the exportation rose to about 85,000 kilograms.

The next three years, 1913-1915, inclusive, saw the development of old plantations rather than the creation of new ones. This was partly due at first to the decline in the price of rubber, partly to the fact that the most available lands had been taken up and partly, later, to the war. But the productivity of the later large estates is just beginning to assert itself. On January 1, 1916, there were in Cochin China and adjacent territory in Annam and Cambodia over 70,000 hectares in rubber plantations, of which over 17,000 hectares were planted to over 5,000,000 trees. Over 400,000 trees had been tapped, about 440,000 more were to be tapped during 1916 and the production for 1916 was estimated at over 700,000 kilos. The amount of capital invested is placed at more than $6,000,000.

CHOOSING A RUBBER PLANTATION IN COCHIN CHINA: CLIMATE, SOIL.

In beginning a rubber plantation the first step is to choose a location, the second to get possession of the land. In choosing a location the primary questions are those of climate and soil. Transportation, difficulty of clearing the land and the labor problem are questions to be solved later.

The question of the right amount of water is an important one in Cochin China. The plantation must have sufficient elevation to avoid the annual floods of the delta region and to afford quick drainage after the annual rains. Many of the trees first planted at Ong-Yem were drowned out during the wet season. On the other hand, the extreme dryness of the years 1911 and 1912 wrought serious handicap to those plantations where irrigation was impossible or insufficient. Then, temperature seems to count for something. There is a point along the coast of Indo-China above which the rubber tree cannot be successfully cultivated. This point seems to be about the 13th parallel north latitude, just north of Nha Trang. The only plantations above this line are those of Delignon Freres near Qui Nhon, in Annam, about 14 degrees north, and still in the experimental stage. Another peril along the coast of Annam is the typhoon. The typhoons of 1909 and 1912 seriously damaged and plantation of Suoi Giao near Nha Trang.

Experiments show the soil of Cochin China to be well adapted to the growth of the rubber tree. A physical analysis made in the laboratory of the Saigon Botanical Gardens of the red lands of Bien Hoa at 100 degrees shows the following compositions:

Sand	478.40
Clay	438.19
Organic matter	67.72
Ferruginous gravel	7.15
Carbonate of lime	6.16
Vegetable mould	2.38
	1,000.00

Chemical analysis of this soil made at the same time and under the same conditions shows the chemical composition indicated in the first column of the following table. The other columns show the composition of red soil taken from plantations in the province of Thudaumot (Xa Trach) and Baria (Arcillon) and an average of seven analyses taken from various parts of Cochin China:

	Bien Hoa.	Thudaumot.	Baria.	Average of 7 Analyses.
Azote	1.81	1.33	.92	1.01
Phosphoric acid	6.70	1.65	5.21	7.22
Potash	1.02	1.10	.59	.62
Lime	3.44	.50	.25	.75
Magnesia	2.49	.35	.59	.39

An analysis under the same conditions of the gray sandy soil of the older plantations shows the following composition:

	Province of Giadinh.		Thudaumot.
	Plantation Josselme.	Thudue.	Ong-Yem.
Azote	.557	9.310	.404
Phosphoric acid	.159	.107	.347
Potash	.510	.796	.510
Lime	.420	.644	.196
Magnesia	.550	.350	.100

These analyses show the red soil to be very rich in phosphoric acid, above the average in azote, but sometimes slightly deficient in potash, lime and magnesia. These deficiencies may be supplied by the occasional use of a small amount of artificial fertilizers. The gray solids, on the other hand, have an abundance of potash, lime and magnesia, but are wanting in azote and phosphoric acid. The lacking substances have been supplied by the application of stable manure and oil cakes.

In practice the red soil has proven richer in the elements necessary for the development of the rubber tree, and colonists who are able to choose are locating their plantations in the red soil strip.

(To be continued.)

Captain Landolphe, Pioneer and Privateer.

The great French botanist, Palisot de Beauvois, gave the name Landolphia *to the African vines that have, in the past, produced a great proportion of the African rubber. That the name was given in honor of a brilliant pioneer, privateer and adventurer, Captain Landolphe, has perhaps been forgotten. This sketch, therefore, from the "Annales de l'Institut Colonial de Marseille" will be read with interest.*

LANDOLPHE, the youngest of 23 children of an archer of the royal army, was born at Auxonne, in Burgundy, February 5, 1747. At the age of 18 he went to Paris to study to become a surgeon. But he soon tired of this and fled to Nantes and later shipped as secretary on the "Royal Louis," bound for St. Domingo, March 7, 1767.

On a second voyage, the ship was wrecked, and of 120 on board only 20 escaped, and Landolphe was rescued after clinging to the mainmast for 16 hours.

After other ups and downs, Landolphe found himself on the slave-ship "l'Africaine," sailing on March 5, 1769, for the Slave Coast. With his comrades he bought 360 negroes, which he sold at Cape Français, St. Domingo, returning to Nantes with a heavier purse and probably a harder heart.

On another trip, Landolphe made a longer stay in Africa, learned the language and the manners of the natives, got into the good graces of the little inland kings, especially with a certain Danican, who proposed he establish a business, to deal in and export the products of the country, which plan, however, he did not adopt till later.

Between voyages Landolphe followed hydrographical courses given by two noted professors and mathematicians of Nantes, Levêque and Guiraud, and graduated as sea captain in March, 1775.

From that time, Landolphe led two lives: the one, that of the founder of a colony that could have become the basis of a French Africa, and the other, the life of a privateer.

After many attempts, and as many setbacks, Landolphe secured the command of the "Négresse," a ship carrying 90 seamen and armed with 20 cannon. War had just broken out in America, and France was talking of extending help to the revolutionists. At the port of Belem, near Lisbon, Portugal, Landolphe rescued 17 American prisoners who had jumped overboard from a British man-of-war and, seeing the *fleur-de-lis* floating from her mast, swam to the "Négresse." The British claimed their prisoners. Landolphe refused on the ground that he was exercising his neutral rights. Being in Portuguese waters, and not too numerous, the English did not insist, but set about to make things uncomfortable. One day as Landolphe was going ashore, he found the landing stage crowded with boats from the British fleet. He ordered his men to row with all possible speed, and ran his boat, head on, into a British launch, sank it, and was ashore with his armed men in time to meet the onrushing, infuriated sailors. The affair ended with an exchange of words instead of blows. Following this a British frigate waited for Landolphe outside of the Portuguese territorial waters, but he escaped.

After many trips, sea battles and storms, after visiting New York and other American ports, Landolphe obtained the indorsement and the aid of the King, sailed back to Benin with three ships, hoisted the white flag of France on a fort constructed by his engineers, and set about to organize a French colony.

CAPTAIN J. F. LANDOLPHE.

In the meantime, the naturalist of his expedition, Palisot de Beauvois, was collecting samples for the great work he was to publish later under the title of "Flora of Oware and of Benin." This was published in 1804-1811, in 20 volumes and with 120 colored illustrations. Illustration XXXIV showed the *Landolphia owariensis*, a plant justly named after the organizer of the expedition.

At Oware on the Benin coast, Landolphe established a trading post, and was doing a business of more than $6,000 per day when the English by an unexpected attack utterly destroyed the post. Landolphe later equipped a ship and sailed to Guadeloupe, arriving there at the outbreak of the French Revolution. He took part with the republicans, organized an army, and subdued the revolt. England, taking advantage of the internal trouble of France, started to appropriate her West Indian colonies. Landolphe armed a powerful ship, and started privateering. Pursued by a British fleet he took refuge in the port of Baltimore. The British blockaded the Chesapeake, but Landolphe eluded the blockade, returned to Guadeloupe, drove the British out of the island, recaptured St. Martin and St. Eustache, and reprovisioned St. Domingo. Surrounded by the British fleet off St. Thomas, he and his men captured two British frigates by boarding, but were later overcome by the superiority of the British artillery. Landolphe was captured, and after many months in prison, he was taken to England and finally released unconditionally, having refused to accept a parole.

Returning to France, Landolphe was acquitted by court-martial for the loss of his ships, and obtained from Napoleon, then first consul, the command of a cruising expedition to the coast of Africa. He fought several successful battles with British fleets, destroyed the Portuguese African trade also, crossed the Atlantic to Buenos Aires and took part in the defense of that city. He destroyed many British ships in South American Atlantic ports from the Plata river to Bahia Blanca. Taken prisoner, he was confined to an island in the bay of Rio de Janeiro, but, thanks to his being a Free Mason, as were the British admiral who captured him, and the Portuguese commander at Rio, he was allowed to go to Lisbon and to Madrid, where he was exchanged. Returning penniless to France, he retired to his home town, where he wrote his memoirs, which were published in Paris in 1823.

Landolphe died in Paris July 13, 1825.

Palisot de Beauvois was certainly well inspired in choosing this vine to perpetuate the name of Captain Landolphe. The *Landolphia owariensis* is the principal source of the rubber collected on the west coast of Africa from Sierra-Leone to Angola.

On the other hand, in French Guinea, in the Soudan and in the Senegal, the plant that takes its place is of a neighboring species, the *Landolphia Hendelotii*, while in the French Congo and the Congo Free State (Belgian Congo) the blacks tap the *Landolphia owariensis* and the *Landolphia Foretii*.

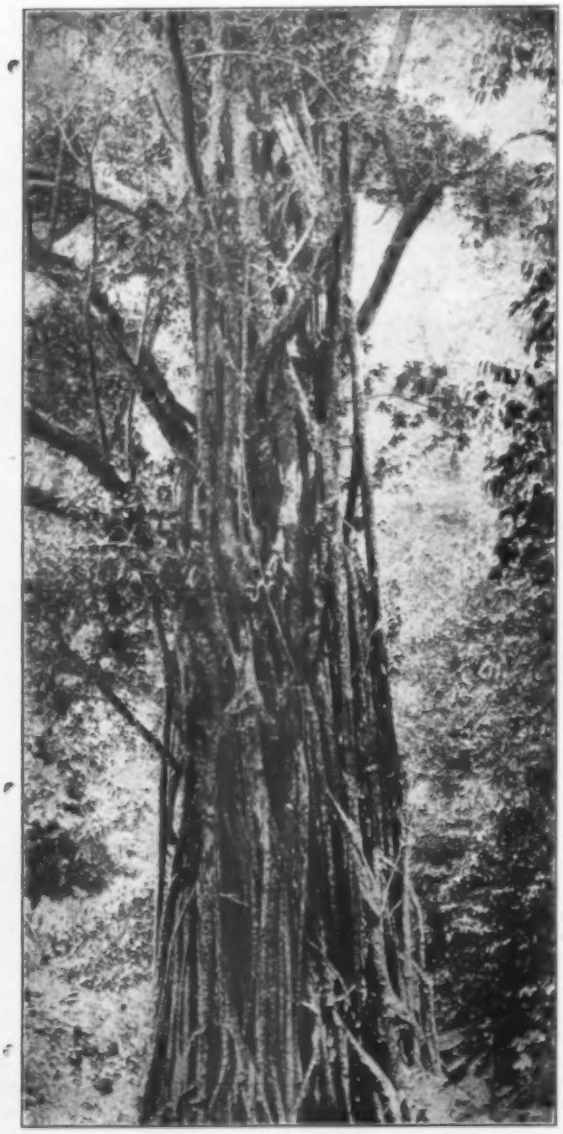
In the sandy districts of the Congo Free State and of Angola, the so-called "grass" and "prairie" rubber is obtained from the rhizomes of plants which, though not vines, are also called *Landolphia owariensis*, especially the *Landolphia Henriquesiana*.

On the east coast, in German East Africa and Mozambique, there is also a species of this kind, the *Landolphia Kirkii*, which is the most common and most important of all rubber vines.

Finally, in Madagascar, the red rubber of the east coast, from Vohémar to Farafangana, is produced by the *Landolphia Madagascariensis*, and the pink rubber from the Boina and the Menabe districts, on the west coast, is from the *Landolphia spocrocarpa* and the *Landolphia Perrierii*.

The Largest Rubber Tree.

A CORRESPONDENT in Los Angeles, California, sends us a picture of what he confidently affirms is the largest of all rubber trees. According to his description, the branches cover a space about 112 feet in diameter. The body of the tree at its thickest point measures about 14 feet in circumference, while each lower limb is about 8 feet in circumference. The tree is not a tall growing variety, but is probably 60 feet in height. The roots spread over the ground for quite a space around the body, giving it an odd appearance. The leaves are about 6 inches long by 3 inches wide and are rather thick. They contain a milk-like juice, that soon condenses and a gummy web is formed.



GIANT FICUS ELASTICA IN SUMATRA.

It has been estimated by a prominent expert on rubber that this tree would make over 100 standard size tire casings.

Speaking of rubber trees, as far back as 1852, Daniel Webster in the great India Rubber Suit committed himself thus:

> It (india rubber) is a gum procured from an equatorial tree found in greater or less quantities in Brazil, and called by botanists *Ficus Elasticus*. . . . It is said to be, in some of its specimens, the largest tree growing on the face of the earth. There are instances in which it is described as being nearly a hundred feet in circumference.

He was in error, of course, in several errors; but the *Ficus Elastica* is the world's big rubber tree. Not in Los Angeles, nor in Brazil, but in Sumatra.

There on the West coast in the town of Siboga is a really big tree. It is 196 feet high, and 180 feet in circumference, 5 feet from the ground, or 60 feet in diameter—nearly thirteen times as big as its California cousin. It has given as much as 100 pounds of rubber in a year. In the accompanying illustration three natives may been seen high up on the trunk of the tree, showing graphically its enormous size.

BIG FICUS ELASTICA IN LOS ANGELES, CALIFORNIA.

USES OF PERFORATED RUBBER SHEET.

Perforated hard rubber sheet is used in storage batteries and also for screening certain substances. Perforated sheet rubber packing is used quite extensively in canning factories for grading green peas after they have been shelled. The soft rubber screen does not injure the peas. Perforated rubber sleeves are sometimes used on driving pulleys to prevent belt slipping.

The Rubber Trade Preparedness Committee.

THAT the rubber trade is fully alive to the importance of an active campaign for "Preparedness," is manifested by the interest taken by the large number of leading firms and corporations, in the rubber and allied trades, to coöperate with the Committee on Preparedness of The Rubber Club of America, Inc., and to disseminate its literature, primarily among rubber men, but also to the public generally.

The Executive Committee on Preparedness of the club consists of Raymond B. Price, chairman, United States Rubber Co. System, New York City; Harvey S. Firestone, Firestone Tire & Rubber Co., Akron, Ohio; George B. Hodgman, Hodgman Rubber Co., Tuckahoe, New York; and Harry S. Vorhis, secretary, New York City.

More than 125 rubber concerns have appointed representatives in nearly 150 cities in the United States as members of local committees, to promote the movement and to arouse public opinion to the importance of bringing the nation to a state of preparedness. In addition to these, representatives have been appointed in many factories to act as sponsors for this movement among the employes, their special efforts being to urge the naturalization of foreign born employes. Such coöperation of wideawake, earnest, enthusiastic men must prove an effective force in furthering this important movement.

The following list gives the concerns which have thus far signified their assurance of coöperation, and the names of their appointees in various cities on this committee:

ACME RUBBER MFG. CO., Trenton, N. J.—R. J. White, Chicago, Ill.; R. B. Smith, New Orleans, La.; S. V. B. Brewster, New York City; E. H. Thiemeyer, St. Louis, Mo.; W. J. Pugh, San Francisco, Calif.

AJAX RUBBER CO., INC., New York City—L. D. Mason, Atlanta, Ga.; S. L. Blood, Boston, Mass.; A. M. DeLisser, Brooklyn, N. Y.; S. H. Pierce, Chicago, Ill.; F. C. Burnett, Dallas, Tex.; F. C. Thompson, Denver, Colo.; W. J. Wells, Des Moines, Ia.; E. J. Trojand, Detroit, Mich.; C. J. Haggerty, Indianapolis, Ind.; W. L. Bayha, Kansas City, Mo.; M. B. Johnson, Minneapolis, Minn.; E. J. Quinn, New York City; D. W. Boyer, Philadelphia, Pa.; K. A. Ward, Cleveland, Ohio.

AKRON PIGMENT CO., Akron, O.—*Factory Representative* J. A. Houser.

ALLIANCE RUBBER CO., Alliance, O.—*Factory Representative* Milton Bejack.

AMERICAN WRINGER CO., New York City—*Factory Representative* J. P. Walsh, Woonsocket, R. I.

ANSONIA O. & C. CO., Ansonia, Conn.—*Factory Representative* R. W. Eastop.

ROBERT BADENHOP CO., New York City—J. E. Odell, Boston, Mass.; W. G. Brown, Cincinnati, Ohio.

BATAVIA RUBBER CO., Batavia, N. Y.—Franklin Kesser, New York City; *Factory Representative* C. M. Marvin, Batavia, N. Y.

BEACON FALLS RUBBER SHOE CO., Beacon Falls, Conn.; D. E. Gray, Boston, Mass.; J. J. Adams, Chicago, Ill.; H. M. Gasaway, Kansas City, Mo.; A. J. Wylie, Minneapolis, Minn.; E. C. Beard, New York City; *Factory Representative* J. T. Crowley, Beacon Falls, Conn.

BIRMINGHAM IRON FOUNDRY, Derby, Conn.—F. B. Wanning, New Haven, Conn.

BLOOMINGDALE RUBBER CO., New York City—J. A. Talbot, Butler, N. J.; Clavin Provost, Chester, Pa.; C. W. Harrison, New York City.

BOSTON BELTING CO., Boston, Mass.—O. P. Arnold, Buffalo, N. Y.; H. H. Whitesell, San Francisco, Calif.; W. E. Greene, New York City.

BOSTON INSULATED WIRE & CABLE CO., Boston, Mass.—*Factory Representative* H. B. Burley.

BOSTON WOVEN HOSE & RUBBER CO., Cambridge, Mass.—P. D. Luce, Albany, N. Y.; F. E. Walker, Atlanta, Ga.; M. F. Smith, Buffalo, N. Y.; R. T. Davis, Chicago, Ill.; V. C. Dempsey, Cleveland, Ohio; J. L. Gillman, Corpus Christi, Tex.; H. S. Winans, Denver, Colo.; L. H. Wyxant, Denver, Colo.; Chas. Campbell, Erie, Pa.; R. J. Owens, New York City; F. E. Stockwell, Philadelphia, Pa.; A. C. Barlow, Pittsburgh, Pa.; H. C. Foster, Richmond, Va.; E. A. Wood, St. Louis, Mo.; F. J. Ryker, San Francisco, Calif.; P. S. Ring, Seattle, Wash.; *Factory Representative* J. W. Fellows, Cambridge, Mass.

BOSTON YARN CO., New York City—P. C. Ware, Boston, Mass.; Cyrus Woodman, Lowell, Mass.

BOURN RUBBER CO., Providence, R. I.—*Factory Representative* Harry F. Lincoln.

L. S. BOWERS CO., New York City—E. M. Stimson, Philadelphia, Pa.

BRITISH-AMERICAN MFG. CO., INC., Springdale, Conn.—*Factory Representative* L. C. Himebaugh.

BRAENDER RUBBER & TIRE CO., Rutherford, N. J.—W. J. Heathcock, Chicago, Ill.; Harry Braender, New York City; W. L. Porter, Philadelphia, Pa.

BUFFALO WEAVING AND BELTING CO., Buffalo, N. Y.—*Factory Representative* D. W. Streeter.

H. O. CANFIELD CO., Bridgeport, Conn.—J. G. F. Squires, New York City; *Factory Representative* M. B. Waldo, Bridgeport, Conn.

CHICAGO RUBBER CLOTHING CO., Racine, Wis.—Philip Loewe, Chicago, Ill.; E. T. Smith, Chicago, Ill.; R. G. Bryant, Racine, Wis.

CLIFTON MFG. CO., Boston, Mass.—*Factory Representative* C. G. Attwood.

COLLYER INSULATED WIRE CO., Pawtucket, R. I.—*Factory Representative* E. C. Bowen.

COMBINATION RUBBER MFG. CO., Bloomfield, N. J.—E. F. McArdle, New York City.

CONTINENTAL RUBBER WORKS, Erie, Pa.—H. J. Elwood, Buffalo, N. Y.; F. W. Fee, Chicago, Ill.; Griswold Wilson, Cleveland, Ohio; E. J. Berwick, Detroit, Mich.; G. H. Carnahan, New York City; W. A. Darling, New York City; B. W. Snowman, New York City; G. E. Crawford, Pittsburgh, Pa.; W. S. Tullis, San Francisco, Calif.; *Factory Representative* C. C. Strickland, Erie, Pa.

CONVERSE RUBBER SHOE CO., Malden, Mass.—W. H. Jones, Chicago, Ill.; F. R. Goodell, New York City; *Factory Representative* M. M. Converse, Malden, Mass.

SAM'L CUPPLES WOODEN WARE CO., St. Louis, Mo.—*Factory Representative* H. B. Wallace.

DAVOL RUBBER CO., Providence, R. I.—Lewis G. Abbott, Boston, Mass.; E. G. Hartwell, Detroit, Mich.; Raymond J. Fries, New York City; Oscar C. Niedenstein, New York City; Edward J. George, Pewaukee, Wis.; P. Raymon Wesley, Providence, R. I.; George A. Sheehan, San Francisco, Calif.; John A. Burgess, Charleston, S. C.; *Factory Representative* Fred J. Riley, Providence, R. I.

DEANE PLASTER CO., Yonkers, N. Y.—*Factory Representative* William F. Holland.

DETROIT INSULATED WIRE CO., Detroit, Mich.—L. A. Wooley, Buffalo, N. Y.; also local representatives in Birmingham, Ala.; Pittsburgh, Pa., and San Francisco, Calif.

DOUBLE FABRIC TIRE CO., Auburn, Ind.—*Factory Representative* C. C. Marston.

DREADNAUGHT TIRE & RUBBER CO., Baltimore, Md.—*Factory Representative* H. James Lepper.

DRY CLIMATE TIRE MFG. CO., Denver, Colo.—*Factory Representative* Richard A. Leigh.

DAYTON RUBBER MFG. CO., Dayton, Ohio—W. C. Minor, Albany, N. Y.; W. C. Floyd, Baltimore, Md.; Herbert W. Rydstrom, Baltimore, Md.; E. C. Newcomb, Boston, Mass.; R. L. DeVoe, Chicago, Ill.; E. G. Hartlieb, Cincinnati, Ohio; L. F. Mau, Cleveland, Ohio; W. E. Trenchard, Columbia, S. C.; M. V. Thompson, Indianapolis, Ind.; B. F. Wade, Los Angeles, Calif.; T. P. Weisenberger, Louisville, Ky.; I. N. Simpson, Milwaukee, Wis.; D. E. Ford, Minneapolis, Minn.; E. R. DeTamble, New York City; B. D. Foster, Pittsburgh, Pa.; B. A. Bienner, Richmond, Va.; Arie Dykstra, Sioux Center, Ia.; *Factory Representative* Barney Hollatz, Dayton, Ohio.

DRYDEN RUBBER CO., Chicago, Ill.—C. F. Quinn, Boston, Mass.; H. J. Gordon, Detroit, Mich.

EARLE BROS., New York City.—E. W. Laird.

ELECTRIC HOSE & RUBBER CO., Wilmington, Del.—J. D. W. Archer, Chicago, Ill.; Henry D. Archer, New Orleans, La.; A. W. Archer, New York City; Wm. M. Sibley, Philadelphia, Pa.

EMPIRE RUBBER & TIRE CO., Trenton, N. J.—W. H. Chadwick, Boston, Mass.; W. H. Paddock, Buffalo, N. Y.; E. B. McKay, Chicago, Ill.; J. B. Fry, Detroit, Mich.; D. F. Wills, Newark, N. J.; T. O'Callaghan, New York City; J. B. Richardson, Philadelphia, Pa.; R. L. Logan, Pittsburgh, Pa.; H. C. Camp, New York City.

ESSEX RUBBER CO., INC., Trenton, N. J.—W. H. Philbrook, Boston, Mass.; E. L. DeVere, Chicago, Ill.; C. C. Tucker, Trenton, N. J.; R. C. Hunter, Detroit, Mich.; A. M. Mallory, New York City.

FALLS RUBBER CO., Cuyahoga Falls, Ohio—*Factory Representative* Mr. Barber.

FAULTLESS RUBBER CO., Ashland, Ohio—*Factory Representative* Percy McDowell.

FEDERAL RUBBER MFG. CO., Milwaukee, Wis.—H. D. Benner, New York City; *Factory Representative* J. M. Tait, Cudahy, Wis.

FIRESTONE TIRE & RUBBER CO., Akron, Ohio—W. F. West, Atlanta, Ga.; B. R. Leisure, Baltimore, Md.; J. E. Weldon, Birmingham, Ala.; T. J. Glenn, Boston, Mass.; E. L. Bixby, Brooklyn, N. Y.; H. W. McFadden, Buffalo, N. Y.; A. W. Moore, Chicago, Ill.; J. P. Patterson, Cincinnati, Ohio; J. D. Hess, Cleveland, Ohio; G. E. Ranney, Columbus, Ohio; H. A. Grubb, Corpus Christi, Tex.; V. G. Kropf, Davennort, Ia.; G. A. Spohr, Des Moines, Ia.; H. A. Coffin, Detroit, Mich.; W. R. McCarty, Fargo, N. Dak.; L. R. Jackson, Grand Rapids, Mich.; F. C. Hebard, Houston, Tex.; W. L. Esterly, Indianapolis, Ind.; F. M. Salley, Jacksonville, Fla.; P. B. Talbott, Kansas City, Mo.; J. Y. Johnston, Los Angeles, Calif.; A. T. Smith, Los Angeles, Calif.; J. E. Mayl, Memphis, Tenn.; J. J. Hegeman, Milwaukee, Wis.; G. M. Martin, Minneapolis, Minn.; A. L. Manley, Newark, N. J.; C. L. Miller, New Orleans, La.; C. D. Studebaker, New York City; R. W. Oburn, Oklahoma City, Okla.; F. C. Rudisell, Omaha, Nebr.; W. R. Walton, Philadelphia, Pa.; G. A. Richards, Pittsburgh, Pa.; F. W. Thatcher, Portland, Ore.; F. T. Bailey, Rochester, N. Y.; F. M. Moore, St. Louis, Mo.; W. L. Sewell, G. C. Faling, San Antonio, Tex.; E. S. Firestone, San Francisco, Calif.; E. R. Wood, Seattle, Wash.; S. L. Clark, Spokane, Wash.; G. I. Engle, Springfield, Mass.; S. E. Douglass, Syracuse, N. Y.; J. J. Haas, Washington, D. C.

FOSTER RUBBER CO., Boston, Mass.—Blake A. Pitcher, Chicago, Ill.; F. C. Bernhardt, San Francisco, Calif.

GENERAL TIRE & RUBBER CO., Akron, Ohio—*Factory Representative* J. G. Stoller.

THE B. F. GOODRICH CO., Akron, Ohio—R. J. Murphy, Atlanta, Ga.; J. T. Kemp, Birmingham, Ala.; F. T. Moore, Boston, Mass.; F. E. Titus, Buffalo, N. Y.; E. P. Rowen, Chicago, Ill.; E. M. Lee, Cincinnati, Ohio; C. A. Dunham, Cleveland, Ohio; P. T. Opper, Detroit, Mich.; H. A. Little, Indianapolis, Ind.; F. A. Oberheu, Kansas City, Mo.; F. R. Carroll, Los Angeles, Calif.; E. W. McCreery, Minneapolis, Minn.; H. J. Morehead, New York City; G. O. Simpson, Philadelphia, Pa.; A. M. Jack, Pittsburgh, Pa.; A. T. Boardman, Portland, Ore.; W. C. Dold, St. Louis, Mo.; C. E. Cook, San Francisco, Calif.; W. D. Albright, Seattle, Wash.

GOODYEAR TIRE & RUBBER CO., Akron, Ohio—R. W. Rost, Albany, N. Y.;

J. E. Taylor, Atlanta, Ga.; A. E. Hertzig, Baltimore, Md.; J. S. Taylor, Birmingham, Ala.; W. R. Bliss, Boston, Mass.; E. B. Sigerson, Buffalo, N. Y.; P. A. Kerns, Butte, Mont.; C. A. Cramer, Cedar Rapids, Ia.; M. Orr, Charlotte, N. C.; C. H. Williams, Chicago, Ill.; E. G. Schick, Cincinnati, Ohio; R. S. Hartzell, Cleveland, Ohio; W. W. Magill, Columbus, Ohio; A. G. Cameron, Corpus Christi, Tex.; H. R. Russon, Dayton, Ohio; R. W. Carter, Denver, Colo.; F. C. Moyer, Des Moines, Ia.; W. A. Hazlett, Detroit, Mich.; G. F. Dennis, El Paso, Tex.; H. S. Twitchell, Erie, Pa.; R. O. Brinker, Fargo, N. Dak.; J. F. Wise, Fresno, Calif.; G. H. Hilbish, Grand Rapids, Mich.; F. J. Redeman, Hartford, Conn.; G. N. Kinkead, Houston, Tex.; E. B. Oscars, Indianapolis, Ind.; J. J. Kendall, Jacksonville, Fla.; C. C. Witthoeft, Joplin, Mo.; R. L. Richey, Kansas City, Mo.; P. W. Smith, Long Island City, N. Y.; E. Lingenfelder, Los Angeles, Calif.; A. W. Ellis, Louisville, Ky.; F. M. Gemmill, Memphis, Tenn.; G. H. Barmore, Minneapolis, Minn.; W. G. Starnes, Nashville, Tenn.; L. H. Vaughn, Newark, N. J.; J. W. Hobbs, New York City; W. E. Dermody, New Orleans, La.; E. C. Newbauer, Oakland, Calif.; R. S. Brace, Oklahoma City, Okla.; J. M. Dine, Omaha, Nebr.; S. W. Reese, Philadelphia, Pa.; H. T. Roseland, Phoenix, Ariz.; I. M. Quinn, Pittsburgh, Pa.; H. M. Parker, Portland, Me.; J. A. Leatherman, Portland, Me.; E. J. Smith, Providence, R. I.; G. W. Lander, Richmond, Va.; F. W. Nason, Rochester, N. Y.; G. Bellis, Sacramento, Calif.; W. E. Finney, St. Louis, Mo.; E. E. Greene, St. Paul, Minn.; R. S. Herman, Salina, Kans.; P. W. Senour, Salt Lake City, Utah; C. F. Dwyer, San Antonio, Tex.; G. L. Wands, San Diego, Calif.; F. E. Carroll, San Francisco, Calif.; W. S. Boone, Scranton, Pa.; C. C. Miller, Seattle, Wash.; A. J. Sears, Sioux City, Ia.; H. A. Jurgewitz, Spokane, Wash.; K. H. Dresser, Springfield, Mass.; W. C. Blake, Syracuse, N. Y.; C. B. Reynolds, Tacoma, Wash.; H. G. Norris, Toledo, Ohio; F. G. Richards, Utica, N. Y.; L. R. Gemmill, Washington, D. C.; E. P. Ramey, Worcester, Mass.; F. N. Hammond, Youngstown, Ohio; *Factory Representative* Don R. Stevens, Akron, Ohio.

GORDON TIRE & RUBBER CO., Canton, Ohio—*Factory Representative* Ray Caler.

GREGORY RUBBER CO., Akron, Ohio—*Factory Representative* T. M. Gregory.

ALFRED HALE RUBBER CO., Boston, Mass.—*Factory Representative* W. D. Lamond.

GUTTA PERCHA & RUBBER MANUFACTURING CO., New York City—A. A. Spadone.

HAGEMEYER TRADING CO., New York City—Arthur W. Stedman.

HARDMAN TIRE & RUBBER CO., Belleville, N. J.—*Factory Representative* B. C. Farra.

HAZARD MFG. CO., Wilkesbarre, Pa.—*Factory Representative* S. A. Hodge.

HODGMAN RUBBER CO., Tuckahoe, N. Y.—E. C. Woods, New York City.

HOME RUBBER CO., Trenton, N. J.—W. F. Higgins, New York City.

HOOD RUBBER CO., Watertown, Mass.—J. J. Burns, Binghamton, N. Y.; W. H. Walker, Buffalo, N. Y.; R. E. Bain, Chicago, Ill.; D. T. Patton, Grand Rapids, Mich.; J. H. Pratt, Milwaukee, Wis.; Gerald Gunnerson, Minneapolis, Minn.; L. Doucette, New York City; F. H. Edmester, New York City; C. S. Hayward, Omaha, Nebr.; T. E. Graham, Parkersburg, W. Va.; G. F. Grieb, Philadelphia, Pa.; W. L. Stewart, Pittsburgh, Pa.; J. B. Knorr, Reading, Pa.; C. A. Battreall, St. Joseph, Mo.; H. L. Hansen, Seattle, Wash.; B. O. Forknall, Syracuse, N. Y.; F. L. Kellogg, Tacoma, Wash.; *Factory Representative* E. I. Aldrich, Watertown, Mass.

HOWE RUBBER CO., New Brunswick, N. J.—F. B. Reese, Atlanta, Ga.; F. L. Herrold, Chicago, Ill.; C. A. Mullen, Los Angeles, Calif.; Albert MacDonald, New York City; A. T. Quayle, San Francisco, Calif.

INDIANA RUBBER & INSULATED WIRE CO., Jonesboro, Ind.—F. D. Schwartz, Chicago, Ill.; Mr. Harrison, New York City.

INTERNATIONAL DISTRIBUTING CO., Cambridge, Mass.—*Factory Representative* Russell S. Fenn.

KELLY-SPRINGFIELD TIRE CO., New York City—J. D. Cary, Atlanta, Ga.; H. B. Limrie, Boston, Mass.; W. H. Bell, Chicago, Ill.; H. S. Cox, Cincinnati, Ohio; D. W. Chamberlin, Cleveland, Ohio; O. R. Cook, Cleveland, Ohio; H. P. Thompson, Dallas, Tex.; G. D. Edwards, Detroit, Mich.; A. A. Lamb, Kansas City, Mo.; Robert Cartmell, Los Angeles, Calif.; T. S. Lindsey, New York City; F. A. Kissell, Philadelphia, Pa.; P. G. Frazier, St. Louis, Mo.; F. R. Hearsch, San Francisco, Calif.

KNIGHT TIRE & RUBBER CO., Canton, Ohio—V. C. Criswell, Atlanta, Ga.

KOKOMO RUBBER CO., Kokomo, Ind.—A. V. Conradt, Kokomo, Ind.; Milton Kraus, Peru, Ind.

LA CROSSE RUBBER MILLS CO., La Crosse, Wis.—Ted Nicar, La Crosse, Wis.; J. W. Love, Minneapolis, Minn.

LEE TIRE & RUBBER CORP., Conshohocken, Pa.—A. O'D. Kelly, Atlanta, Ga.; G. H. Wright, Chicago, Ill.; W. B. Fewell, New York City.; *Factory Representative* R. S. Koser, Conshohocken, Pa.

LINCOLN RUBBER CO., Akron, Ohio—*Factory Representative* R. G. Nevins.

LOWELL INSULATED WIRE CO., Lowell, Mass.—*Factory Representative* Harry W. Kittredge.

LUZERNE RUBBER CO., Trenton, N. J.—*Factory Representative* B. Bedford.

MANHASSET MFG. CO., Providence, R. I.—*Factory Representative* A. D. Lown.

MANHATTAN RUBBER MFG. CO., Passaic, N. J.—Frank B. Henderson, Chicago, Ill.; C. C. Olney, New Orleans, La.; A. G. Francis, St. Louis, Mo.; R. A. McKinney, Pittsburgh, Pa.; *Factory Representative* A. F. Townsend, Passaic, N. J.

MARATHON TIRE & RUBBER CO., Cuyahoga Falls, Ohio—Owen Moynihan, New York City; C. M. Folger, San Francisco, Calif.; G. R. Howell, Omaha, Nebr.

MASON TIRE & RUBBER CO., Kent, Ohio—*Factory Representative* D. M. Mason.

MATTSON RUBBER CO., Lodi, N. J.—*Factory Representative* Samuel Mullane.

MECHANICAL FABRIC CO., Providence, R. I.—A. L. Kelley, Providence, R. I.; Arthur E. Lloyd, Providence, R. I.

MILLER RUBBER CO., Akron, Ohio.—W. O. Cramp, Atlanta, Ga.; R. W. Norris, Jr., Baltimore, Md.; M. L. Dawson, Binghamton, N. Y.; E. E. Holmes, Boston, Mass.; T. W. Underwood, Boston, Mass.; A. J. Strong, Buffalo, N. Y.; J. L. Casey, Canton, Ohio; J. G. Budde, Chicago, Ill.; W. W. Robertson, Cincinnati, Ohio; Robert Nierman, Cleveland, Ohio; C. H. Gray, Dallas, Tex.; Chas. T. Collins, Denver, Colo.; P. E. Yokes, Erie, Pa.; J. T. Bruce, Grand Rapids, Mich.; M. F. Null, Jr., Greensburg, Pa.; C. P. York, Greenville, Ohio; F. B. Bosch, Harrisburg, Pa.; L. C. Broering, Indianapolis, Ind.; H. T. Fowler, Kansas City, Mo.; Wm. Briscoe, Knoxville, Tenn.; F. A. Forsythe, Lexington, Ky.; J. O. Ward, Los Angeles, Calif.; F. A. Jack, Louisville, Ky.; E. S. Curtice, Meridian, Miss.; F. W. Abbott, Minneapolis, Minn.; H. C. Miller, New York City; N. E. Quick, New York City; L. C. Kohn, Omaha, Nebr.; E. N. Stimson, Philadelphia, Pa.; S. S. Stewart, Pittsburgh, Pa.; P. A. Seator, Richmond, Va.; J. J. Rutherford, Rochester, N. Y.; John Shufford, St. Louis, Mo.; F. W. Jackson, San Francisco, Calif.; Dudley Williams, San Francisco, Calif.; Capt. W. G. Austin, Savannah, Ga.; G. R. Loggie, Syracuse, N. Y.; A. H. Draime, Toledo, Ohio; W. J. Helfort, Utica, N. Y.

CHARLES E. MILLER, Anderson, Ind.—*Factory Representative* William Maze.

MICHELIN TIRE CO., Milltown, N. J.—E. R. Dunning, Atlanta, Ga.; L. H. Fiske, Boston, Mass.; A. B. Wagner, Chicago, Ill.; J. J. Byrne, Cleveland, Ohio; L. B. Mangum, Dallas, Tex.; C. T. Hamrick, Denver, Colo.; F. J. Potter, Des Moines, Calif.; R. Roullier, Jacksonville, Fla.; W. I. Heasley, Los Angeles, Iowa; O. H. Wagner, Minneapolis, Minn.; B. I. Van Hoesen, New York City; T. Y. Sutphin, Philadelphia, Pa.; H. E. Hollenbeck, Portland, Ore.; F. R. Morey, St. Louis, Mo.; J. M. Cummings, San Francisco, Calif.; E. C. Lammertz, Syracuse, N. Y.; A. W. Smith, Kansas City, Mo.; *Factory Representative* E. E. Connolly, Milltown, N. J.

MOHAWK RUBBER CO., Akron, Ohio—B. J. Rodgers, Atlanta, Ga.; H. L. Smith, Chicago, Ill.; Jean Nehmelman, New York City.

NEW CASTLE RUBBER CO., New Castle, Pa.—*Factory Representative* J. A. Fletcher.

NEW JERSEY CAR SPRING & RUBBER CO., Jersey City, N. J.—C. G. Race, Chicago, Ill.; C. A. Bennett, Los Angeles, Calif.; H. L. Cook, New York City; W. C. Bowne, Philadelphia, Pa.

NEW YORK INSULATED WIRE CO., New York City—*Factory Representative* William Foole.

NORWALK TIRE & RUBBER CO., Norwalk, Conn.—*Factory Representative* D. Spence.

PACKARD ELECTRIC CO., Warren, Ohio—*Factory Representative* R. M. Marshall.

PARKER, STEARNS & CO., Brooklyn, N. Y.—*Factory Representative* John J. Jones.

PENNSYLVANIA RUBBER CO., Jeannette, Pa.—D. D. F. Yard, Atlanta, Ga.; W. O. Durell, Boston, Mass.; S. W. Lowry, Chicago, Ill.; J. G. Smith, Corpus Christi, Tex.; J. Q. Goudie, Detroit, Mich.; C. F. Kent, Kansas City, Mo.; F. J. Walpole, Minneapolis, Minn.; G. C. McCullough, New York City; O. A. Olson, Omaha, Nebr.; George Blair, Philadelphia, Pa.; James Lewis, Pittsburgh, Pa.; G. C. Weyher, Pittsburgh, Pa.; James F. Madden, San Francisco, Calif.; P. F. Hearsh, Seattle, Wash.; *Factory Representative* Geo. W. Daum, Jeannette, Pa.

PERFECTION TIRE & RUBBER CO., Fort Madison, Ia.—*Factory Representative* F. E. Humphrey.

PHILADELPHIA RUBBER WORKS CO., Philadelphia, Pa.—H. A. MacKusick, New York City; A. J. Conlin, New York City; J. K. Mitchell, Philadelphia, Pa.

PLYMOUTH RUBBER CO., Canton, Mass.—*Factory Representative* Jesse H. Mason.

POLACK TYRE & RUBBER CO., Bridgeport, Conn.—J. A. Harris, Baltimore, Md.; Wright Webb, Boston, Mass.; J. W. Conway, Bridgeport, Conn.; R. W. Cavanaugh, Chicago, Ill.; J. M. Briceland, Cincinnati, Ohio; E. M. Mason, Cleveland, Ohio; R. M. Lane, Detroit, Mich.; J. M. Baldwin, Newark, N. J.; J. F. Crowley, New York City; M. Smolens, Philadelphia, Pa.; A. F. Studt, Pittsburgh, Pa.; R. R. Rodgers, Providence, R. I.; *Factory Representative*, John W. Conway, Bridgeport, Conn.

PORTAGE RUBBER CO., Akron, Ohio—J. C. Eubank, Boston, Mass.; B. J. Wildman, Chicago, Ill.; Charles E. Ball, Cleveland, Ohio; J. W. Wildman, Des Moines, Ia.; G. M. Adams, Jacksonville, Fla.; C. E. Neumann, Milwaukee, Wis.; John G. Boss, Los Angeles, Calif.; E. P. White, New York City; L. T. Ware, St. Paul, Minn.; O. V. Dibble, San Antonio, Tex.

PORTLAND RUBBER MILLS, Portland, Ore.—H. C. Huntington, Portland, Ore.

QUAKER CITY RUBBER CO., Philadelphia, Pa.—A. Romain, Chicago, Ill.; Jos. S. Royal, New York City; E. A. Batzell, Pittsburgh, Pa.; *Factory Representative* F. W. Daniel, Philadelphia, Pa.

RACINE RUBBER CO., Racine, Wis.—H. H. Taylor, Austin, Tex.; C. D. Pettingell, Tampa, Fla.; also local representatives in Baltimore, Md.; Birmingham, Ala.; Boston, Mass.; Buffalo, N. Y.; Charlotte, N. C.; Cheyenne, Wyo.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Columbus, Ohio; Dallas, Tex.; Dayton, Ohio; Decatur, Ill.; Des Moines, Ia.; Detroit, Mich.; Indianapolis, Ind.; Janesville, Wis.; Kansas City, Mo.; Los Angeles, Calif.; Richmond, Va.; Saginaw, Mich.; Syracuse, N. Y.; Kenosha, Wis.; Erie, Pa.; Milwaukee, Wis.; Minneapolis, Minn.; Philadelphia, Pa.; Wichita, Kans.; Oshkosh, Wis.; Peoria, Ill.; Racine, Wis.; New York City; Oklahoma City, Okla.; San Francisco, Calif.; *Factory Representative* L. T. Vance, Racine, Wis.

REPUBLIC RUBBER CO., Youngstown, Ohio—C. W. Trabue, Atlanta, Ga.; W. S. Carleton, Boston, Mass.; C. W. Heintz, Buffalo, N. Y.; J. W. Maguire, Chicago, Ill.; H. A. Rogers, Cincinnati, Ohio; B. B. Harris, Columbus, Ohio; R. W. Llewellyn, Columbus, Ohio; L. A. Watts, Dallas, Tex.; W. R. Goudie, Denver, Colo.; W. M. Perrett, Detroit, Mich.; P. L. Niles, Kansas City, Mo.; W. C. Hendrie, Los Angeles, Cal.; F. W. Osmun, Minneapolis, Minn.; C. W. Hardin, New York City; B. C. Swinehart, Philadelphia, Pa.; J. H. Irwin, Pittsburgh, Pa.; J. N. Succop, Pittsburgh, Pa.; John O. Leslie, Portland, Ore.; George M. Hoffman, St. Louis, Mo.; Irvin Reed, San Francisco, Calif.; J. P. Clifford, Seattle, Wash.; R. N. Church, Spokane, Wash.; L. L. McAnaney, Cleveland, Ohio; *Factory Representative* Wallace Dunn, Youngstown, Ohio.

RUTHERFORD RUBBER CO., East Rutherford, N. J.—R. J. Bowman, Albany, N. Y.; Chas. Schoreman, Baltimore, Md.; D. P. Osborne, Boston, Mass.; F. H. Howard, Bridgeport, Conn.; T. H. Cone, Brooklyn, N. Y.; A. T. Everett, Hackensack, N. J.; F. E. Hutchinson, Hartford, Conn.; P. H. Berg, Jersey City, N. J.; George H. Brush, Newark, N. J.; Henry Losee, New Haven, Conn.; F. E. Babbidge, New York City; T. E. Carley, Paterson, N. J.; Frank DeWitt, Philadelphia, Pa.; W. H. Quintard, Providence, R. I.; John R. Campbell, Reading, Pa.; E. E. Raymond, Rochester, N. Y.; George Tietjen, Rutherford, N. J.; C. A. Reynolds, Springfield, Mass.; C. J. Cochran, Washington, D. C.; R. T. Gerrodette, Worcester, Mass.

A. SCHRADER'S SON, INC., Brooklyn, N. Y.—*Factory Representative* M. C. Schweinert.

SEAMLESS RUBBER CO., New Haven, Conn.—H. C. Sweeton, Chicago, Ill.; A. L. Hatch, New York City.

A. G. SPALDING & BROS., New York City—M. B. Reach.

STANDARD FOUR TIRE CO., Keokuk, Ia.—*Factory Representative* W. J. Ingram.

STANDARD WOVEN FABRIC CO., Walpole, Mass.—*Factory Representative* R. D. Northrop.

STOWE & WOODWARD CO., Campello, Mass.—*Factory Representative* Myles Foster.

SUSSEX RUBBER CO., Rutherford, N. J.—*Factory Representative* A. J. Teigeler.

SWINEHART TIRE & RUBBER CO., Akron, Ohio—A. J. Greene, Boston, Mass.; C. J. Weber, Chicago, Ill.; F. E. Boylan, Detroit, Mich.; W. M. Armour, Kansas City, Mo.; H. G. Fitler, Philadelphia, Pa.; F. D. Wait, New York City.

TAUNTON RUBBER CO., Taunton, Mass.—*Factory Representative* Joseph L. Gifford.

THERMOID RUBBER CO., Trenton, N. J.—J. H. Listen, Chicago, Ill.; J. N. Kirk, Jr., New York City; H. Blanchard, Philadelphia, Pa.; F. S. Wilson, San Francisco, Calif.; J. W. Pohlman, Indianapolis, Ind.; *Factory Representative* Robert J. Stokes, Trenton, N. J.

TOLEDO-FINDLAY TIRE & RUBBER CO., Findlay, Ohio—*Factory Representative* C. W. Roberts.

TWIN CITY CORD TIRE CO., Minneapolis, Minn.—*Factory Representative* Walter W. Shoemaker.

TYER RUBBER CO., Andover, Mass.—H. G. Tyer, Boston, Mass.; Mr. Froom, Chicago, Ill.; Mr. Lavelle, Chicago, Ill.; Mr. Ketner, Chicago, Ill.; Mr. Snyder, Chicago, Ill.; William F. West, Chicago, Ill.; Stanwood A. Morrill, Dallas, Tex.; F. L. Williams, New York City; Sidney Spohn, San Francisco, Calif.

UNITED STATES ASBESTOS CO., Lancaster, Pa.—*Factory Representative* Chester L. Hill.

UNITED STATES RUBBER CO., New York City—W. H. Jones, Baltimore, Md.; E. L. Phipps, Boston, Mass.; J. S. Watterson, Buffalo, N. Y.; R. C. Hall, Chicago, Ill.; H. C. Pratt, Cleveland, Ohio; Wm. Webster, Columbus, Ohio; T. J. Needham, Des Moines, Ia.; A. H. Krum, Detroit, Mich.; J. F. Hassett, Indianapolis, Ind.; W. P. Enright, Minneapolis, Minn.; U. S. Magee, Los Angeles, Calif.; Wm. McAdam, Omaha, Nebr.; A. A. McClure, Omaha, Nebr.; A. E. Waugh, Philadelphia, Pa.; W. A. North, Pittsburgh, Pa.; A. B. Patterson, Pittsburgh, Pa.; W. J. Roope, Portland, Ore.; H. W. Waite, Providence, R. I.; C. W. Huber, Rochester, N. Y.; R. C. King, St. Louis, Mo.; George W. Perry, St. Louis, Mo.; A. C. Krieger, St. Paul, Minn.; J. B. Brady, San Francisco, Calif.; A. H. Gregory, San Francisco, Calif.; T. H. Wilkinson, San Francisco, Calif.; H. A. Thompson, Seattle, Wash.; E. C. Atwater, Spokane, Wash.; H. A. Griffith, Spokane, Wash; J. H. Glismann, Syracuse, N. Y.; H. A. Thompson, Tacoma, Wash.; Jos. Emerson, Philadelphia, Pa.

UNITED STATES RUBBER CO.—SUBSIDIARY COMPANIES.

UNITED STATES TIRE CO., New York City—T. R. Burton, Atlanta, Ga.; R. E. James, Bangor, Me.; G. W. Leeming, Birmingham, Ala.; E. H. Kidder, Boston, Mass.; J. C. Toomey, Boston, Mass.; W. D. Douglass, Charlotte, N. C.; P. C. Anderson, Chicago, Ill.; George S. Shugart, Chicago, Ill.; E. W. Bailey, Cincinnati, Ohio; W. C. Price, Cincinnati, Ohio; P. H. Goodall, Cleveland, Ohio; I. E. Doyle, Columbia, S. C.; C. L. Crippen, Columbus, Ohio; E. D. Hensley, Dayton, Ohio; F. F. Sargent, Denver, Colo.; W. H. Mesenbrink, Des Moines, Ia.; Chas. J. Butler, Detroit, Mich.; William McMahan, Detroit, Mich.; W. C. Standish, Detroit, Mich.; Joseph Walker, Duluth, Minn.; A. E. Evenson, Fargo, N. Dak.; C. L. Sowers, Grand Rapids, Mich.; Chas. Clark, Hartford, Conn.; A. H. Lewis, Hutchinson, Kans.; W. B. Harding, Indianapolis, Ind.; J. M. Ward, Indianapolis, Ind.; W. E. Johnson, Jacksonville, Fla.; L. A. Brown, Kansas City, Mo.; S. M. Kellum, Knoxville, Tenn.; L. H. Goodman, Louisville, Ky.; I. W. Elliott, Manchester, N. H.; E. C. Dusold, Milwaukee, Wis.; E. B. Tozier, Minneapolis, Minn.; H. F. Snyder, Newark, N. J.; R. A. Kimberly, New Haven, Conn.; R. P. Motte, New Orleans, La.; F. I. Reynolds, New York City; E. S. Roe, New York City; E. H. Johansen, Baltimore, Md.; J. J. Watt, Oklahoma City, Okla.; G. List, Philadelphia, Pa.; S. S. Poor, Philadelphia, Pa.; C. C. Gehring, Pittsburgh, Pa.; J. C. Given, Pittsburgh, Pa.; E. T. Richardson, Portland, Me.; H. E. Crocker, Providence, R. I.; W. H. Croswell, Richmond, Va.; H. H. Hubbard, St. Louis, Mo.; H. B. Gustafson, Sioux City, Ia.; George E. Carter, Terre Haute, Ind.; C. Q. Vaughn, Toledo, Ohio; E. H. Johansen, Washington, D. C.; Emil Ruppel, Wheeling, W. Va.; C. F. Bolay, Wilkes-Barre, Pa.; R. E. Smith, Worcester, Mass.

EUREKA FIRE HOSE MFG. CO., New York City—George A. Wies, New York City.

FABRIC FIRE HOSE CO., New York City—W. T. Cole, New York City.

GOODYEAR'S INDIA RUBBER GLOVE MANUFACTURING CO., Naugatuck, Conn.—S. H. Jones, New York City.

HARTFORD RUBBER WORKS CO., Hartford, Conn.—*Factory Representative* C. B. Whittlesey.

INDIA RUBBER CO., New Brunswick, N. J.—Charles D. Parshall, Erie, Pa.

MECHANICAL RUBBER CO., Cleveland, Ohio—D. C. Blanchard, Chicago, Ill.; A. T. Hopkins, Cleveland, Ohio; W. G. Lindsey, Detroit, Mich.; F. Y. Stewart, New York City.

NEW YORK BELTING & PACKING CO., New York City—John Mills, Chicago, Ill.; J. H. Cobb, New York City.

PEERLESS RUBBER MANUFACTURING CO., New York City—R. J. Barker, Boston, Mass.; L. S. Hungerford, Jr., Chicago, Ill.; D. P. Sands, Kansas City, Mo.; E. F. Berry, New Orleans, La.; C. A. Hunter, New York City; A. B. Mears, Philadelphia, Pa.; H. C. Hartman, St. Louis, Mo.; J. E. Dixon, San Francisco, Calif.

REVERE RUBBER CO., Chelsea, Mass.—W. D. Rigdon, Boston, Mass.; W. Gussenhoven, Chicago, Ill.; H. N. Hubert, New Orleans, La.; G. A. Gardner, New York City.

RUBBER REGENERATING CO., Naugatuck, Conn.—J. W. McKeand, Mishawaka, Ind.; C. M. Van Kleeck, Naugatuck, Conn.

UNITED & GLOBE RUBBER MANUFACTURING COS., Trenton, N. J.—L. Palmer Pall, Chicago, Ill.; R. A. Kincaid, Denver, Colo.; George A. Sill, Duluth, Minn., Henry A. Wight, Detroit, Mich.; George C. Penboss, New York City; C. H. McCandless, Pittsburgh, Pa.; J. G. Miller, St. Louis, Mo.; George S. Fowler, Washington, D. C.; Arthur S. Jenkins, Philadelphia, Pa.; H. B. Rice, New Orleans, La.

VAN CLEVE CO., New York City—H. G. Cleveland.

VULCAN RUBBER CO., Erie, Pa.—*Factory Representative* Bernard Cochran.

VULCANIZED RUBBER CO., New York City—Oscar Beck.

WERNER & PFLEIDERER CO., Saginaw, Mich.—A. J. Vollrath, New York City.

WESTERN RUBBER CO., Goshen, Ind.—Donald C. Barbee, Milwaukee, Wis.; A. F. Fisher, St. Louis, Mo.

CHARLES T. WILSON CO., INC., New York City—Samuel Lund, Corona, L. I.; Hugo Hauff, Newark, N. J.

WOVEN STEEL HOSE & RUBBER CO., Trenton, N. J.—*Factory Representative* John Herrmann.

CHEMICAL EXPOSITION AND SOCIETY MEETINGS.

THE Second National Exposition of Chemical Industries, to be held at the Grand Central Palace, New York City, during the week of September 25-30 will call together chemists and those engaged in many allied industries from all sections of the country. A number of chemical societies have chosen this city and the above date for their regular or special meetings.

The section of Rubber Chemistry will gather at the same time, and a general conference on the progress of chemistry of india rubber will be held. This section will be under the chairmanship of Dr. Lothar E. Weber, of Boston, Massachusetts. J. B. Tuttle, Bureau of Standards, Washington, District of Columbia, is the secretary. It is expected that some interesting papers will be presented at this meeting.

The Chemists' Club, who will also have headquarters at the exposition, have offered the lobby of the clubhouse for the registration of the members of the society. The Chemists' Club, which is a few squares from the Grand Central Palace, has been selected as the headquarters of the American Chemical Society, and on Monday afternoon the council of the American Chemical Society will hold a business meeting there, followed by a dinner tendered to the council by the New York Section. This society will also conduct a symposium on occupational diseases presided over by Professor Charles Baskerville, head of the department of chemistry of the College of the City of New York. Among the subjects treated will be the avoidance of contamination of the air in rubber factories by the fumes of bisulphide of carbon; the avoidance of and remedy for lead poisoning, and diseases or troubles incidental to work in rubber factories. A general discussion will be held by leading authorities of the country, including Drs. W. Gilman Thompson, F. L. Hofman, J. W. Schereshewsky, G. P. Adamson, H. K. Benson, W. A. Lynott, Alice Hamilton, and J. B. Andrews.

MEETING OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

The semi-annual meeting of the National Association of Cotton Manufacturers will be held September 14-16 at The Griswold, New London, Connecticut. Besides the usual business of the association there will be many interesting papers read, a golf tournament and a banquet at which questions of national importance to the cotton industry will be discussed by eminent speakers.

TOY MANUFACTURERS FORM ASSOCIATION.

Toy Manufacturers of the U. S. A., Inc., is the name of an association recently incorporated, the objects, as explained in its constitution, being to coöperate with and help toy merchants in every conceivable way; to exchange ideas on matters pertaining to manufacturing problems; to protect the members in the matter of credits by exchange of information; to take an interest in all legislation affecting the toy industry, and to carry on a national campaign of advertising to acquaint the public with American-made toys. The manufacture of rubber toys is an important branch of the rubber industry and it is likely that manufacturers of such goods will consider it to their interest to join the association, which has an office at 200 Fifth avenue, New York City. The officers are as follows: A. C. Gilbert, president; Harry C. Ives, A. D. Converse, vice-presidents; Leo Schlesinger, treasurer, and Fletcher D. Dodge, secretary.

What the Rubber Chemists Are Doing.

VARIABILITY IN VULCANIZATION OF PLANTATION PARA.

AN important study of the cause of variability in respect to the rate of cure of plantation Para is being conducted by B. J. Eaton and J. Grantham in the chemical laboratory and experimental vulcanizing factory, Department of Agriculture, Federated Malay States.

THE INDIA RUBBER WORLD, October, 1915, page 11, and December, 1915, page 114, presented abstracts of the first communication on this research. The second communication, published in "The Journal of the Society of Chemical Industry" (June 15, 1916) is abstracted below.

In their previous paper, the authors indicated that the primary cause of variability in rate of cure was attributable to the accelerating action of a small quantity of some substance existing in the latex or produced subsequently in the raw rubber from some constituent present in the latex.

Subsequent experiments have been directed to ascertaining the nature of this substance and its behavior under different treatments, to determine its probable constitution. These efforts have resulted in the isolation or preparation of a substance or substances from the latex serum to which acceleration in rate of cure can be attributed, and evidence has been obtained of the presence of a second substance which also has a similar effect.

The experimental results of the present paper confirm the theory that the rate of cure is influenced by the amount of an accelerating agent formed by the decomposition of some constituent of the latex, and that this substance is a decomposition product of the protein or nitrogenous constituents of the latex, produced usually in the freshly coagulated raw rubber by the action of micro-organisms, which gain access to the latex after it leaves the tree, or possibly in some cases decomposition by chemical action. The retarding effect of smoking, on the rate of cure, has proved to be a more complicated problem than at first appeared. The retarding effect, though invariably shown by slab, has been found not to be constant in sheet, especially in thin sheet. This is due to the fact that, in smoking rubber, more than one variable factor, influencing the rate of cure, is present.

In most of their experiments the authors used raw rubber in the form of slab slightly pressed, or unpressed coagulum containing a large percentage of serum. The latex was coagulated one day about noon, left in the serum till about 10 A. M. the following day and then rolled under a wooden rolling pin on a sloping table. All samples were eventually converted to thin crêpe before vulcanizing. In order to demonstrate that the differences obtained by the authors in their experimental samples were not a special feature of the latex or rubber prepared in their factory, their methods of preparation were repeated for them on different estates, with identical results.

The authors present their investigation in three divisions:

PART I.—EXPERIMENTAL.

Part I embraces a group of experiments for determining—
The time necessary to develop the change in slab rubber, causing an increase in rapidity of cure.
The effect of antiseptics, heat and cold.
The effect of formalin.
The effect of soaking in running water.

CONCLUSIONS UNDER PART I.

1. That the rate of vulcanization of rubber from any given latex is determined by the extent to which a certain change takes place subsequent to coagulation.

2. This change is normally limited to the first few days after coagulation. The change is progressive and reaches a maximum in "slab" rubber (*i. e.*, coagulum containing a large proportion of the serum) in approximately six days after coagulation.

3. The change can be arrested either partially or completely by the action of formalin, heat, and cold. It is also arrested by crêpeing shortly after coagulation, which may be due either to the larger surface exposed or to the more rapid drying, or both, combined with the removal of most of the serum in machining to crêpe form.

4. The complete arrest or inhibition of the change by formalin (similar effects have been obtained with other antiseptics) and by the action of both heat and cold, indicates the formation by biological action of a substance which increases the rate of cure of raw rubber, the decomposition being probably of an anaerobic nature. There is no evidence that the change is due to chemical agencies.

In this connection experiments carried out on latex frozen for several days at 12 to 15 degrees F., are of considerable interest, since by freezing for this period, the rubber no longer cures rapidly, even if left for a considerable period afterwards at 84 degrees F.

[The method of freezing latex to produce rubber has been patented in the Federated Malay States. Latex after freezing for 4 to 5 hours is coagulated and, on thawing the solid block thus formed, a solid coagulum is formed, whereas latex can be frozen for a short period and on thawing is reconverted into latex.]

PART II.—EXPERIMENTAL.

Part II deals with the probable nature of the constituent of the latex involved in the changes in raw rubber, and the nature of the constituents which are responsible for the variations in rate of cure of different rubbers.

The experiments of Part II included the addition of proteins to rubber and the effect was determined of the following additions:

Casein and peptone.
Decomposed casein.
Protein from the latex.
Evaporated serum minus protein.
Decomposed protein from serum.

CONCLUSIONS UNDER PART II.

It is apparent from these experiments that there exist in the serum two substances: (1) a substance of the nature of protein, precipitated or coagulated by heat, which is ineffective in accelerating the rate of vulcanization unless decomposed; (2) a soluble substance, only obtained by evaporation and not easily decomposed, which has itself an accelerating action or vulcanization.

Decomposed precipitated protein is effective in much smaller quantity than serum residue obtained by evaporation, after the heat coagulated protein has been removed.

In the ordinary preparation of sheet and crêpe rubbers the greater part of the serum is removed in machining the coagulum, and the whole of the soluble products may be washed out in crêpeing, so that normally the accelerating effect of the soluble serum is nothing. All of the experiments of the first part show the gradual development of the accelerating substance during the first few days after coagulation. This is attributed to the decomposition of protein (similar in nature to that precipitated from the serum by heat) which is precipitated with the rubber during coagulation.

PART III.—ANALYTICAL. NITROGEN CONTENT OF RUBBER AND THE RATE OF VULCANIZATION.

The contrast between the high nitrogen content of a slow-

curing crêpe, compared with the low nitrogen content of fast-curing crêpe from a slab rubber, can only be explained on the theory that, in the slab rubber, decomposition of the protein or nitrogenous substance takes place. A soluble portion is washed out during crêpeing, and the insoluble residue, or part of it, is presumably the substance causing acceleration in rate of cure in the case of slab rubbers.

In view of the vulcanizing results obtained in Parts I and II, the authors have analyzed a large number of their samples which are tabulated below, together with the rate of cure determined by the load-stretch curve method.

Per Cent of Nitrogen in Dry Sample.	Optimum Time of Cure in Hours.	Per Cent of Nitrogen in Dry Sample.	Optimum Time of Cure in Hours.	Per Cent of Nitrogen in Dry Sample.	Optimum Time of Cure in Hours.
0.31	2¾	0.42	2¾	0.28	2¼
0.26	1½	0.19	1¼	0.22	1½
0.19	1¼	0.37	2¾	0.31	2¼
0.16	1¼	0.36	2½	0.19	1¾
0.17	1¼	0.36	3½	0.24	1¼
0.17	1¼	0.35	2¾	0.37	3¼
0.18	1¼	0.38	3½	0.24	1
0.18	1¼	0.20	1½	0.38	3¼
0.33	2½	0.20	1¾	0.20	1
0.30	1¾	0.40	2¾	0.39	3¼
0.16	1¼	0.19	1	0.26	1
0.11	1¼	0.40	3¼	0.36	3¼
0.13	1¼	0.33	3	0.27	1¾
0.12	1¼	0.23	2¼	0.38	3¼
0.12	1¼	0.27	2½	0.40	3½
0.18	1¼	0.36	2¾	0.19	2¼
0.17	1¼				

In every case, the amount of nitrogen in a slow-curing rubber, is about 50 to 100 per cent greater than the amount of nitrogen contained in a fast-curing slab rubber, the amount of nitrogen being determined on all samples after conversion to crêpe and drying.

On the other hand, the amount of nitrogen in samples of rubber prepared by the evaporation of thin layers of latex, or by pouring out the latex into thin layers, after addition of acid coagulant, and allowing the thin sheets thus obtained to dry rapidly, is high, and amounts in some cases to 0.5 per cent. Such samples are rapid curing, although the percentage of nitrogen indicates that no decomposition of the protein or nitrogenous constituents of the rubber has taken place, the factor deciding rapidity of cure being apparently, in this case, the unknown substance present in the evaporated serum after removal of the major portion of the protein.

SUMMARY.

1. The experiments and results of Part I show that one factor which causes variability in respect of rate of cure in plantation Para rubber is produced during the first six days after coagulation and that the change which takes place in the coagulum is progressive during this period, while after this period, no further change, under ordinary conditions, takes place.

2. The action of antiseptics, such as formalin, as well as heat and cold, are also shown to inhibit this change, while soaking of the fresh coagulum in running water considerably retards the rate of cure.

3. The action of formalin is also shown to be partly, though not to any great extent, an action on the accelerating agent after its formation.

4. Experiments on the cold storage of freshly coagulated rubber show that while the change which produces rapidity of cure is inhibited as long as the coagulum remains in cold storage, if the rubber is removed again and allowed to remain, without machining, for a further period (13 days or possibly less) at ordinary atmospheric temperatures (about 85 degrees F. in the Federated Malay States), rapidity of cure is again brought about.

5. All the experiments of Part I suggest that the change which produces rapidity of cure in the rubber is caused by biological agencies, that is to say, micro-organisms entering the latex after collection and remaining in the coagulum, and that the change is probably a decomposition of the protein or nitrogenous substances present in the coagulum, producing an accelerating agent which is a decomposition product of the proteins.

6. The experiments of Part II, on the slow-curing rubbers of various proteins and nitrogenous substances, and their decomposition products, including the proteins from the latex serum, decomposed by suitable methods after separation from the serum, confirm the conclusions from the experimental evidence contained in Part I, and show that the original proteins have little or no effect under the conditions employed, while the decomposed proteins have a marked effect.

7. Experiments with undecomposed evaporated serum, after separation of the proteins coagulated by heat, suggest the presence of a second factor which accelerates the rate of cure, and is due to some substance originally present in the latex.

8. In the case of the authors' so-called "slab" rubbers, possibly both factors are responsible for the acceleration of the rate of cure, and it would appear that the second factor may be responsible for the actual superior tensile properties of the rubber. Some evidence to this effect is contained in the comparatively poor quality of the rubbers to which the protein decomposition product has been added, in which the second factor has been removed, and also in the good quality in the case of the evaporated latex samples and the rubber to which the evaporated serum has been added. Further experiments are, however, necessary to confirm this.

9. Experiments with evaporated latex, which contains all the serum constituents and is dried with sufficient rapidity to prevent decomposition of the proteins, also confirm the presence of this second factor.

10. The nitrogen figures given in Part III still further confirm the decomposition theory, that is to say, the production of some substance from the protein which accelerates the rate of cure, the nitrogenous portion which becomes soluble in water and is removed on crêpeing being non-essential. The high nitrogen content, on the other hand, in rapidly curing rubbers produced by evaporation of the latex, without decomposition of the protein, again confirms the evidence obtained as to a second factor which is probably of a non-nitrogenous nature.

11. These experiments and results also show why it has not been possible hitherto to connect the nitrogen content of a rubber with its rate of cure, since a rapidly curing rubber may have either a low or high nitrogen content, and indicate how previous workers have gone astray, or not gone sufficiently far in their investigations, in connection with the protein or nitrogenous constituents of latex and rubber.

12. Many other experiments on nearly 1,000 samples of rubber all confirm the above results and conclusions.

13. A further investigation is now being made as to the exact nature of the protein decomposition product, which accelerates the rate of cure, and as to the nature of the second factor responsible for acceleration, together with the numerous subsidiary factors which influence the rate of cure, a number of which have already been investigated.

The authors have since found that the protein left in sheet of average thickness can be decomposed and so produce a more rapidly curing sheet rubber by simply rolling up the sheets after machining in order to retain sufficient moisture content for the bacterial decomposition. This demonstrates that the rapidity of cure of the so-called slab rubber is largely due to the decomposition of protein nominally retained by the rubber, even after rolling to sheet form. These results also show the importance of the rate of drying during early stages, as a factor in the preparation of sheet rubber, in order to have a uniform rate of cure.

It is reported from France that the incendiary lozenges and asphyxiating gases the German army has been using so freely are due to the work of Dr. Wolfgang Ostwald, the well-known German chemist and editor of the "Kolloid-Zeitschrift."

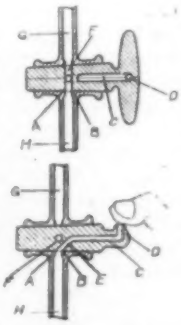
VULCANIZATION OF CAOUTCHOUC AND ITS REGENERATION.

THE chemical investigation of the vulcanization of caoutchouc and the possibility of its regeneration from the vulcanized product is the subject of a paper by I. C. Harries in "Berichter," 1916 [Vol. 49, pages 1196-1201]. In the ordinary hot vulcanization process with about 10 per cent of sulphur, two distinct stages must be differentiated. The primary action is an absorption phenomenon, since the sulphur can be extracted practically quantitatively with a solvent such as acetone, and, moreover, does not pass into the derivatives, such as the hydrochloride, which contains only a trace of sulphur, although, unlike the hydrochloride of natural caoutchouc, it is quite soluble in chloroform. On the other hand, a vulcanized caoutchouc which has been kept for a long time in a warm place, contains from 2 to 4 per cent of sulphur, which resists the action of solvents, and it also gives a sulphur-containing hydrochloride. The vulcanization of caoutchouc is accompanied by a change from the metastable form of the natural caoutchouc to a stable form, a change which is accompanied by the above mentioned difference in solubility bebetween the hydrochlorides of the natural caoutchouc and of the caoutchouc obtained by desulphurizing the vulcanized product. In chemical structure both forms are apparently identical, although the stable form is more slowly attacked by ozone, and in their solubility relationships they behave very differently. The desulphurized vulcanization product cannot again be satisfactorily vulcanized. This is not due to the extraction by the acetone of a substance which favors the vulcanization, as Harries had previously supposed, but rather to the fact that a regeneration of the caoutchouc or reconversion to the metastable form is an essential preliminary to revulcanization. Theoretically, the devulcanization is but a secondary consideration.

LABORATORY APPARATUS.

AUTOMATIC PIPETTE.

AN automatic pipette for which Alexander Lowy, of the Commercial High School, Brooklyn, New York, has applied for a patent, is shown in the illustration, as relates to the stop-cock, which is the improved patentable feature. The valve or stop-cock is placed in the tube.



With suction applied at end of the tube *G* the liquid is drawn upward through tube *H* until it just passes the graduation level *A B*. The opening *D* is then closed air tight by the thumb and the cock rotated 90 degrees, clock wise, establishing connection between *H* and *D* through passage *F C*. The thumb is then released and air pressure forces the exact measured volume of liquid from the pipette.

The advantages are summarized as follows:

1. Automatic control of exact measured volume of liquid in the pipette.
2. Obviates manipulating the exact volume of liquid once it has passed the graduation mark, placed where the stop-cock meets the lower end of the valve of the pipette.
3. Permits discharge of exact measured volume.
4. Ease of manipulation.

An instrument of the hydrometer type has been patented by T. Cockerill, Government Technical Schools, Colombo, Ceylon, for use in testing rubber latex. The graduations are marked in addition to or in place of the specific gravity numbers with the quantity of acid per gallon required to coagulate the latex, and also in some cases the number of ounces of rubber per gallon of the latex. [British patent No. 100,591.]

CHEMICAL TREATMENT OF RUBBER.

THE UNITED STATES.

PROCESS OF MAKING CAOUTCHOUC-LIKE SUBSTANCES.—The process consists in producing substances resembling or related to caoutchouc by shaking a butadiene hydrocarbon with an alkali metal and zinc balls in the presence of carbon dioxide and then, when a dark-colored mass has been obtained, adding a further quantity of butadiene hydrocarbon, and allowing polymerization to proceed, also in the presence of carbon dioxide. [Henry S. A. Holt, Ludwigshafen, Germany, assignor to Badische Analin & Soda Fabrik, Ludwigshafen, Germany. United States patent No. 1,192,310.]

TIRE FILLER. A composition comprising raw rubber, 34 pounds; infusorial earth, 14 pounds; rosin oil, one pint; flour of sulphur, four pounds; air slaked lime, four ounces; carbonate of ammonia, two pounds; baking soda, one pound. [Edward L. Sherbondy, Los Angeles, California, assignor to Aero-Cushion Tire Co., San Jose, California. United States patent No. 1,193,196.]

CANADA.

RECOVERING RUBBER. A process for recovering rubber contained in rubbered fabrics, consisting in treating the fabrics with ethane tetrachloride, heating the fabrics during this treatment, filtering the resulting mass to remove the fabric, adding water to the filtrate and heating it to drive off the water and solvent. [La Compagnée Générale des Caoutchoucs de Térébenthine, Paris, France. Canadian patent No. 168,727.]

VULCANIZATION ACCELERATOR. Accelerating the vulcanization of natural or artificial caoutchouc or caoutchouc-like substances by vulcanizing them in the presence of paranitrosodimethylaniline or its homologues. [S. J. Peachey, Manchester, England. Canadian patent No. 168,806.]

PLASTIC CHLORINE DERIVATIVE OF CAOUTCHOUC. Same subject matter as British patent No. 1,894 (1915). (See below). [S. J. Peachy, Manchester, England. Canadian patent No. 168,807.]

THE UNITED KINGDOM.

PLASTIC MATERIALS. Caoutchouc is treated with chlorine to form a plastic or solid material resembling celluloid or leather. The caoutchouc is first dissolved in carbon tetrachloride, or other solvent which does not react with chlorine, and which is a solvent for the product to be obtained, hydrocarbons being excluded. This solution, after treatment with chlorine or with a gaseous mixture containing chlorine, is evaporated or distilled. During chlorination the solution is jacketed with circulating cold water. In an example, 50 grams caoutchouc in 1,250 cc. carbon tetrachloride are allowed to absorb 100 grams of chlorine. Camphor, mineral fillers, or pigments may be added. [S. J. Peachey. British patent No. 1,894 (1915).]

CEMENT FOR APPLYING SHOE SOLES AND REPAIRING.—The cement is made by melting together 1 pound gutta percha, ½ pound caoutchouc, 2 ounces pitch or bitumen, 1 ounce shellac, and 2 ounces mineral oil. [R. M. Dobbie, Ayr. British patent No. 4,771 (1915).]

SWEDEN.

RUBBER SUBSTITUTE. Ordinary isoprene is polymerized by suitable substances at a temperature not above 374 degrees F. [Chemical Fabrik Co. Swedish patent No. 40,471.]

OTHER CHEMICAL PATENTS.

THE UNITED STATES.

1,191,390. Process for making condensation products from phenols and formaldehyde. Ludwig Berend, Amöneburg-on-the-Rhine, Germany.

1,191,439. Process for preparing cellulose esters. Joseph Koetschet and Max Theumann, Lyon, France, assignors to Société Chemique des Usines du Rhône, France.

1,191,801. Process of manufacturing plastic substances from derivatives of cellulose. Feodor Lehmann and Johannes Stocker, Berlin, Germany.

1,194,201. Resinous products and method of producing same. J. F. A. McCoy, Wilkinsburgh, assignor to Westinghouse Electric & Manufacturing Co., East Pittsburgh—both in Pennsylvania.

New Machines and Appliances.

A MODERN GRINDER AND MIXER.

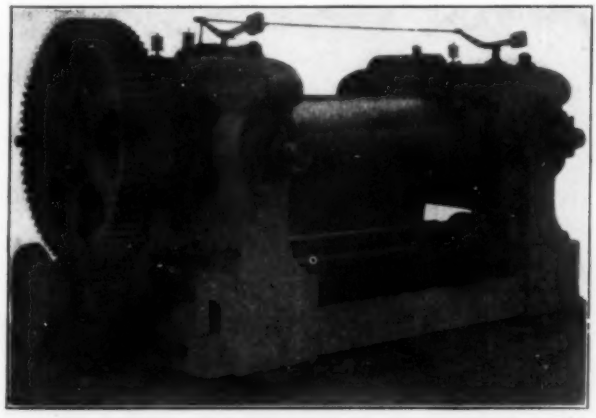
LARGER and better machines are now being designed and constructed by rubber machinery manufacturers to keep pace with the steadily increasing requirements of the rubber industry. The accompanying illustration shows a modern type of mill now being manufactured for the grinding and mixing of rubber and is particularly adapted to handling tire stocks. The bedplate is heavy and substantial, having twelve foundation bolts with the necessary plates, and is provided with two solid pedestals that are lined with babbitt metal and arranged for grease lubrication.

The housings and caps are made of semi-steel, of a rugged design for heavy duty, and the journal boxes which are also of heavy construction are provided with wide seats on the housings. Full bronze liners of special bearing bronze are fitted in the boxes, and arranged for direct water cooling circulation.

The rolls are not equal in diameter, one being 22 inches and the other 26 inches, while the length of both is 84 inches. They are made of chilled iron, the journals ground true, and bronze stuffing boxes with distributing pipes are furnished for controlling the temperature. The adjusting screws and nuts are of steel, easily removable at all times and provided with a locking device. Breaking cups for overloads are placed between the screws and boxes, and automatic cast-iron guides, compensating for the opening of the rolls, are mounted on the journal boxes. A bronze sight feed oiler and an accessible grease pocket are provided for each journal for the purpose of lubrication.

The shafting is of hammered steel turned true and smooth. Both drive gear and pinion have cut spur teeth, the gear being made of semi-steel in one piece; the steel pinion is made in halves with machined joint, and heavy holding bolts.

The connecting gears are of steel, and have cast spur teeth with staggered face. The connecting gears operate in a deep

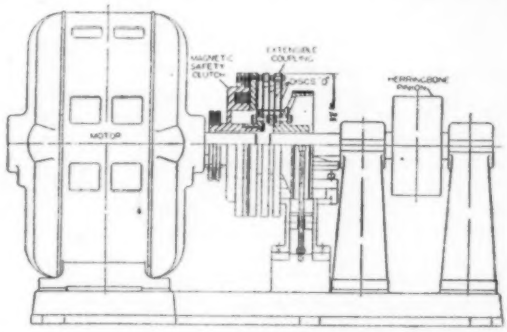


slush pan of cast iron and are enclosed by a heavy sheet steel cover provided with hand holes for inspection. A balanced bar with throw-out switch provides means for instantly stopping the mill in case of an emergency. [Farrel Foundry & Machine Co., Ansonia, Connecticut.]

EXTENSIBLE COUPLING FOR MILL DRIVES

All users of herringbone gears are familiar with the bad effect of end thrust, or any constraint which does not leave the gears perfectly free to align themselves. The resulting noise, vibration and wear are very objectionable, especially in the case of rubber calender rolls where a very smooth action is desired. Many efforts have been made to remedy the trouble, which has always been an objection to the use of herringbone gears.

The use of any fixed end thrust causes too much constraint, and the lack of it allows the lateral motion due to the drift of the motor armature or any other external forces acting on the shaft to be transmitted directly to the pinion, with the disagreeable results before mentioned. Flexible couplings have been,



and are being, widely used with the idea of relieving the gears from these end thrusts and some form of connection between the motor and herringbone pinion was desired which would (1) transmit the necessary power; (2) leave the pinion free to align itself with the gear, and (3) leave the pinion unaffected by any end thrust, caused by lateral motion of the shaft.

Such a coupling has been recently designed, and is here shown, in connection with the well-known magnetic safety clutch which has been in use on calender rolls for some time.

The mechanical construction of the coupling is very simple, the principal object being to make the disks *D* strong enough to transmit the torque, and at the same time secure the utmost flexibility. It may easily be seen that the amount of torque transmitted is only dependent on the thickness of the disks, and the size of the bolts. The extensibility is only dependent on the flexibility of the disks, and is absolutely independent of the amount of torque transmitted, in that it is the same when no load is being transmitted as when the load is maximum.

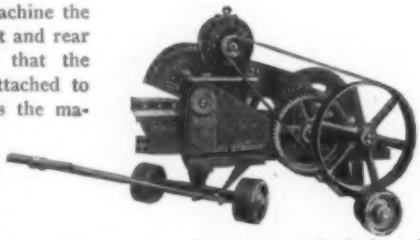
In order to secure the utmost extensibility the disks are laminated, each disk consisting of several thin disks bolted together. The deflection of a thin circular plate under a given load varies inversely as the cube of the thickness. Three ⅛-inch disks will transmit the same torque as one ⅜-inch disk, but the three thin disks will deflect nine times as easily as the one thick disk. Practice has demonstrated the correctness of this theory, and in the case of a 32-inch coupling recently built, the force necessary to cause a deflection of a large part of an inch, was much less than the end sliding friction in the bearings.

While this coupling has only been applied to rubber calender work, where it has met instant approval, it is not limited to this field, and may be applied in any case where a truly extensible coupling is desired. [The Cutler-Hammer Clutch Co., Milwaukee, Wisconsin.]

PORTABLE MOTOR DRIVEN ALLIGATOR SHEARS.

Alligator shears are indispensable to the rubber scrap and reclaiming industries; moreover, the great variety of refractory material to be cut generally requires a heavily constructed and powerful shear. The illustration and description of the lighter portable type that follows are offered as a suggestion for doubt-

less so convenient a machine could be made useful in many rubber plants that do not reclaim rubber scrap. In fact it is now used in a large tire factory for cutting scrap tires to facilitate packing, prior to shipping to the reclaimer.

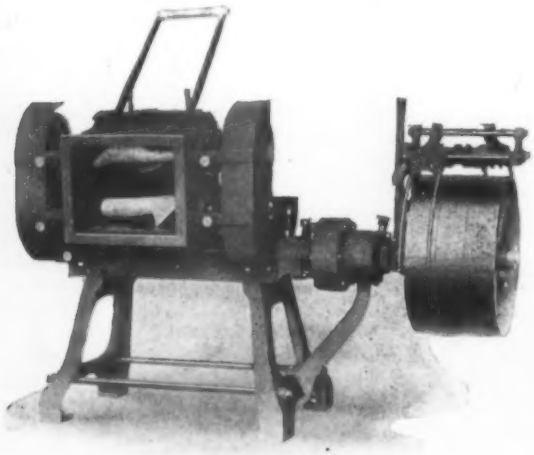


In the No. 1 machine the axles at both front and rear are so arranged that the tongue may be attached to either axle. Thus the machine is drawn to the scrap pile and when the cutting is over the tongue is attached to the rear axle and the shear drawn away. A special crank shaft and pitman permit a 7½ inch opening at the widest point of the jaws.

This machine is made in both stationary and motor-driven types and requires only one man to operate it, making 50 cuts per minute with the expenditure of three horse-power. Thus it will be seen that considerable scrap can be cut in a day at very small cost. [The Canton Foundry & Machine Co., Canton, Ohio.]

NEW DRY COMPOUNDING MACHINE.

A new type of masticator for dry compounding has been recently designed as the result of experiments tending to prove the theoretical superiority of a masticating blade over the ordinary compounding roll. Sufficient power, the chief requisite, especially for the higher grade compounds, has been considered in the construction, resulting in a much larger and stronger built machine. Another factor that makes for an enclosed machine is the increasing use of various forms of lamp black and other light substances for compounding, which have a strong tendency to fly about and cause considerable dirt and annoyance.



The following advantages are claimed by the manufacturers:

AUTOMATIC. The proper time for breaking down various gums can be determined by experiment and also the proper sequence for adding the ingredients and the time required to incorporate them completely into the compound.

LABOR SAVING. Owing to the fact that personal attention is not necessary to each machine between the various loadings, it is estimated that one man of ordinary intelligence can handle four machines.

MORE UNIFORM COMPOUND. As the compounding of the material is automatic in the machine, which not only has a compressing action but a kneading and mixing action, the ingredients are thoroughly and uniformly incorporated into the compound, eliminating the personal equation in manipulation, a most important cause for lack of uniformity in the compound.

BETTER TEMPERATURE CONTROL. The outer shell or trough is jacketed, and the blades made hollow, if desired, so that the effect of steam, cold water or even brine can be applied to a very large surface of the material.

FLYING DUST CONTROLLED. The inconvenience of flying dust, so troublesome in the lighter compounds, can be controlled to a large extent, as the active blades are inclosed in a chamber or trough.

The size of the machine is considerably larger than the ordinary type, but it is claimed that it takes up considerably less space than mills of corresponding capacity.

The working capacity of this machine is figured at approximately 10 cubic feet per charge against 5½ cubic feet, the charge of the regular masticator.

The power required will, of course, vary with the compound. The machine is designed to carry 125 horse-power without overloading, although it is estimated that the average demand will be from 65 to 80 horse-power.

The time of masticating must naturally be determined by experiment for each compound, but in experiments held up to the present time it has varied from half an hour to an hour.

A small machine having a capacity of about one cubic foot, on which this company has been conducting experiments at their Saginaw factory, will be exhibited at the Second International Exposition of Chemical Industries to be held at the Grand Central Palace the week of September 25. [Werner & Pfleiderer Co., Saginaw, Michigan.]

THE FREEMAN IMPROVED BLOCK PLANER.

All manufacturers of rubber goods, using power cutting machines and wood cutting boards or die blocks, will find a planer or resurfacer a valuable and needed addition to their factory equipment.

The operation of the machine is simple. The board or block to be planed is clamped on a platen and fed automatically. The cutter head is covered with a guard, making it perfectly safe, and also acts as a part of dust collector and can be connected with the dust collecting system if that is available; if not, almost all the chips are collected and dropped at the side of the machine into a receptacle placed there for that purpose. By using this machine, blocks can be kept in good condition, effecting a saving in blocks and practically eliminating sprung or broken dies.

The machine is self contained, having its own counter shaft with friction pulley. It has a locking lever to start and stop, automatic feed in either direction and a knife grinding attachment.

It is built in the following sizes for the rubber trade: No. 0 will plane boards or blocks 4 feet long, 24 inches wide and 24 inches high, while Nos. 1 and 2 will plane boards or blocks 6

feet and 9½ feet long respectively, and 24 inches in width and height. A four-foot block can be planed in two minutes so that the labor is a small item. [The Louis G. Freeman Co., Cincinnati, Ohio.]

THE UTILITY AIR HOIST.

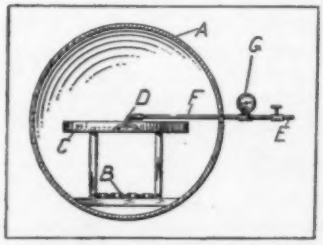
Progressive methods in modern rubber mills require progressive equipment to successfully carry out in practice the principles of progressive manufacture. Labor saving is the constant watchword of the executive, superintendent and department foreman, who know the value of time and energy-saving equipment.

Air hoists are not new, but the application of this efficient and economical power to various uses in rubber mills is of comparatively recent date. The hoist illustrated here is specially designed for removing covers and lifting tire molds in and out of the heaters. Solid tire and hose molds are handled quickly and safely with this device and in removing calender and mill rolls its adaptability is instantly apparent to all practical men. The hoist is shown suspended from a trolley and travels on a track constructed from I beams that are hung from the ceiling over the machines the hoist is intended to serve. Air is supplied from the main line and the operator controls the movement of the piston by a conveniently placed handle that operates the valve lever. [Utility Manufacturing Co., Cudahy, Wisconsin.]

MACHINERY PATENTS.

VULCANIZING TUBING OR HOSE IN FIVE HUNDRED FEET LENGTHS.

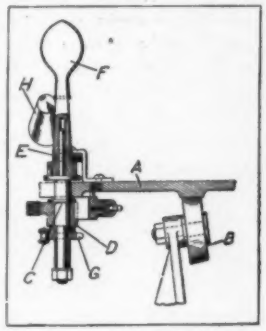
IN the manufacture of rubber tubing or jacketed hose the usual procedure consists in first forming the interior of rubber stock which is then semi-cured and the jacket braided or woven about the tube. The hose is then vulcanized by admitting steam to the interior without application of heat to the exterior which sometimes resulted in poor adhesion between the plies of fabric.



The method illustrated here apparently eliminates the disadvantages of the old process by subjecting both the interior and exterior of the hose to the same vulcanizing heat. In the drawing, which is a vertical section, *A* is the vulcanizer shell that is heated by steam pipes *B*. The pan *C*, supports the coils of hose *D*, the ends of which are connected to pipes *E* and *F*, through which the vulcanizing medium is introduced to the interior of the hose. This fluid medium is controlled by two valves and a gage *G* which registers the pressure within the hose. Dry air is admitted to the vulcanizer which is maintained at the required temperature by the steam coils. Thus the tubing or hose is cured in an even manner, the interior and the exterior portions being subjected to the same vulcanizing temperature. [H. S. Blanchard, New York City, and F. Duesler, Cleveland, Ohio, assignors to the Mechanical Rubber Co., Cleveland, Ohio. United States patent No. 1,190,261.]

ROLLING BEADS ON NECKS OF TOY BALLOONS.

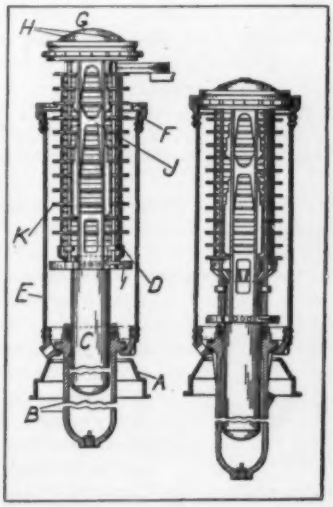
This machine is designed for forming beads on the ends of the tubular necks of toy balloons, with rapidity and without injury to the rubber stock. It consists of an annular plate or disk that revolves in a horizontal plane, supporting on its outer edge a plurality of forms over which the necks of the balloon are placed.



The drawing is a vertical section showing only one of these form carriers, the method of attaching to the revolving plate and the cone-shaped roller that forms the bead. The plate *A*, positively rotated by worm gearing, is supported by rollers *B*. The spools *C* are supported by a series of swinging arms *D*, pivoted to the under side of the plate *A*. The forms *E* support the balloons *F* and are rotated at the proper time by sprocket wheels *G* when brought in contact with the cone-shaped roller *H* that rolls up the bead on the neck of the balloons as they pass by. Means are provided for properly seating and holding down the forms on the carriers during the action of the bead roller which exerts an upward pressure on the balloon neck. [W. A. Brubaker and F. F. Brucker, Akron, Ohio. United States patent No. 1,192,383.]

GAMMETER'S VERTICAL PRESS VULCANIZER.

Hydraulic press vulcanizers of this type usually comprise a shell in which the tire molds are placed, a removable head with some sort of quick opening and tight closing device and a hydraulic ram or rams for raising or lowering the molds, and clamping them against the head.



Gammeter employs a single ram that simultaneously raises and lowers the molds and the head, against which the former are clamped by action of the ram while a specially designed packing ring effectively seals the joint between the shell and head.

The drawing on the left is a partly vertical section and side elevation of the press in position for charging and discharging. On the right is a similar view showing the head locked in position and the molds being forced against the head by the ram during vulcanization.

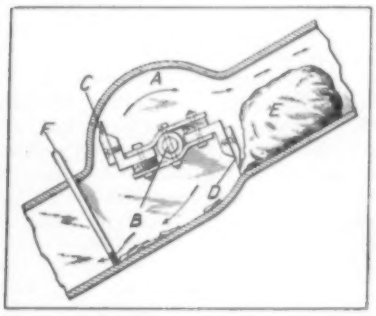
The base *A* supports the hydraulic cylinder *B* in which reciprocates the ram *C* provided at its upper end with a platen *D*. The vulcanizing casing *E* is supported by a base ring that is attached to the upper flange of the ram cylinder, and *F* is a ring secured to the top of the casing, provided with alternating lugs and spaces, corresponding to those of the head *G*. Depending

from the head is a mold frame consisting of four bolts *H*, the upper ends of which are fixed to the head and the lower ends to a ring *I* that slides freely on the ram piston. A pair of racks *J* are arranged one between each pair of rods, the upper ends being bolted to the head and the lower to the ring. These have shoulders that engage the mold carrying trays *K* that are each provided with holes through which the bolts pass.

When the molds have been placed on the trays the ram is lowered and the head rotated by a segment rack and pinion which locks it in place, and at the same time disengaging the frame from the ram head which is then free. Pressure is admitted to the cylinder and the ram forces the nest of molds upwards against the head. A rubber packing ring mounted in the ring at the top of the shell automatically seals the joint when steam is admitted to the vulcanizer. [J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City. United States patent No. 1,191,296.]

GUM CHICLE CUTTING MACHINE.

When in the raw state gum chicle is in the form of irregularly shaped blocks which must be cut into small pieces prior to the washing process. Usually this work is done by hand, with the ordinary hatchet as the only tool, and is therefore a laborious and expensive process. On account of the low melting point of the gum a machine of special construction has been designed and is here shown in side elevation in the plane of a line through the center of the machine.



A is the housing in which revolves the shaft *B* carrying the revolving cutter head to which are bolted the knives *C* and *D*. The block or blocks of chicle *E* are fed by gravity to the knives which chop off a piece of gum at each revolution. The size of the chips and the quantity produced depends on the speed at which the knives are rotated and the weight of the blocks. The contour of the central part of the housing and the revolving cutter head produces a blast of air that is effective in cooling the gum and preventing it from melting and clogging the machine. [B. W. Brown, Roselle Park, New Jersey. United States patent No. 1,190,372.]

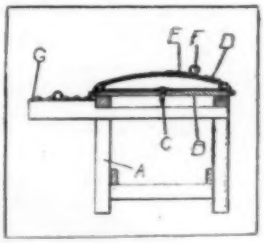
GOLF BALL.

The principal idea disclosed in this invention is embodied in the construction of a golf ball with a liquid center in which a ball having a greater specific gravity than the liquid, is free to move about, with the object of aiding flight and insuring better control of the ball.

The golf ball comprises a container *A* made of double texture fabric and filled with liquid *B*. Rubber tape *C* is wound under high tension around the container *A*, and rubber threads are then wound around the tape windings as indicated at *D*. Finally, then, the cover *E* is applied, which may be of any wear resisting material such as gutta percha. The ball *F*, as previously stated, is of a specific gravity greater than the liquid, and is made of hard composition or hardened steel with a smooth surface to prevent puncturing the container. While there is only one inner ball shown, more than one can be used if desired. [W. R. Knight, Bellville, New Jersey, assignor to St. Mungo Manufacturing Co. of America, Newark, New Jersey. United States patent No. 1,192,831.]

INNER TUBE ROLLING TABLE.

This radical departure from the old time flat top rolling table presents several points of novel interest, particularly the pneumatic feature. The drawing is a cross section of the new table, consisting of legs *A* and a flat base board *B* that is longer than the mandrel on which the tube is rolled. *C* is the valve through which the oblong rubber air bag that covers the entire top of the table, is inflated and *D* is a protecting strip that extends the entire length of the table.



The strip of stock *E* is laid on the table and the edges of the strip are moistened with rubber solution. The two operators place the mandrel *F* on the lower edge of the stock to which it adheres, and roll it up around the mandrel forming a tube. The mandrel and tube thereon is then rolled over the crown of the table and down to the rack *G* ready to be cured. [C. L. Witsaman, assignor to Firestone Tire & Rubber Co., Akron, Ohio. United States patent No. 1,194,803.]

SUBERS CORD COVERING MACHINE. A tubular flattened fabric band is made by inter-winding the individual strands previously impregnated with rubber on a mandrel at the same time that bands of unvulcanized rubber are interposed between the series. The fabric band is finally removed from the mandrel and flattened to form a band with selvage edges. [L. A. Subers, East Cleveland, Ohio. United States patent No. 1,192,017.]

CUSHION TIRE. Two rigid annular rings of sheet metal are placed on the inside of the rubber casing, one conforming to the inner circumference adjacent to the rim and the other to that of the tread. [T. L. Carbone, Charlottenburg, Germany. United States patent No. 1,192,036.]

TIRE BUILDING MACHINE. Four or more collapsible cores are carried by a revoluble frame that presents each core to different reels of frictioned fabric, so that while the inner fabric plies are laid on one core, the outer plies are laid on another, thus a plurality of casings are progressively constructed. [John T. Lister, Cleveland, Ohio. United States patent No. 1,190,432.]

A later patent relating to the same machine provides improvements in supporting and driving the cores and compressing rollers, also means for shaping the material to each core. [John T. Lister, Cleveland, Ohio. United States patent No. 1,190,433.]

MOLD AND PROCESS FOR SEMI-SOLID TIRES. The mold comprises separate annular side, top and bottom sections that are arranged to be clamped together. The annular body of rubber forming the tire is laid around the inner base that is built up of frictioned fabric forming an inner tube provided with an ordinary air valve. The tube is inflated, forcing the rubber against the walls of the mold, and the tire is then vulcanized. [M. A. Dees, assignor to American Tire Co.—both of St. Louis, Missouri. United States Patent No. 1,192,994.]

TIRE CASING INSPECTING MACHINE. The finished casing is passed between rollers so shaped that the tread is bulged inward, whereby the tire material is stretched and any imperfections disclosed. [H. J. Hoyt, assignor to Morgan & Wright—both of Detroit, Michigan. United States patent No. 1,193,691.]

THE UNITED KINGDOM.

CORD FABRIC SPREADER. The weftless fabric consisting of parallel cords, is fed between liquid solution rollers and then under a spreading knife whence it passes through a dryer and is then spooled with a liner between the rubberized fabric. [E. Burdin, 71 Rue Ney, Lyons, France. British patent No. 2,568 (1915).]

VULCANIZING TIRE CASINGS. The inner circumferential edges of a finished casing are brought together and held by a strip of unvulcanized tape forming a tube. This is placed in a two-part mold provided with an inner expanding ring that holds the tire in place. Steam is admitted to the interior of the casing which is then cured in a press vulcanizer of the Doughty type. [F. A. Byrne, 2 Ludgate Hill, Birmingham, England. British patent No. 8,075 (1915).]

MAKING TENNIS BALLS. Inflated playing balls are made by first forming with beveled edges, hemispherical shells of semi-cured stock. The edges are cemented and the parts placed in two-part molds that are brought together in an atmosphere of compressed air, a portion of which is entrapped within the ball. The pressure of the surrounding atmosphere on the exterior of the balls being relieved, heat is applied to the molds and the balls are vulcanized. [R. H. Rosenfeld, Cleveland, Ohio, and F. T. Roberts, Trenton, New Jersey. British patent No. 8,756 (1915).]

COMPOSITE RUBBER SOLE. This invention consists of a sole with a tread portion of rubber or rubber composition and a shank or rear portion of a different material having greater strength and toughness than the rubber portion and also being less expensive. [Williams-Kneeland Co., South Braintree, Massachusetts. British patent No. 12,818 (1915).]

A COMBINATION SOLID AND PNEUMATIC TIRE. Two pneumatic tubes are embedded in annular openings that are molded within a solid tire near the central circumference, allowing sufficient rubber between the tubes and the tread. The tubes are inserted through narrow openings in the side of the tire and provided with suitable air valves, while the entire tire is enclosed in an outer cover. [R. Blakoe, 69 A, Queens Road, Bayswater, London, England. British patent No. 16,579 (1915).]

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1,191,590. Cementing machine. T. P. Hall and A. Bates, Leicester, England, assignor to United Shoe Machinery Co., Paterson, N. J.

1,192,143. Machine for coating fabrics. J. F. White and L. B. Ross, Chicago, Ill.; said Ross assignor to said White.

1,192,181. Bead rolling device for pneumatic tires. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.

1,192,272. Pneumatic tire core. H. C. Brown and G. Williams, Akron, Ohio, assignors of one-third to E. McSweeney.

1,192,379. Cementing machine. F. A. Brackett, assignor of one-half to F. L. Emerson—both of Binghamton, N. Y.

1,192,380. Cementing machine. F. A. Brackett, assignor of one-half to F. L. Emerson—both of Binghamton, N. Y.

1,192,674. Drive-chain. F. J. Oakes, Indianapolis, Ind., assignor to Link-Belt Co., Chicago, Ill.

1,192,874. Separable core. W. R. Denman, Akron, Ohio.

1,192,937. Tire repair tool. L. V. Rood, Marietta, Ohio.

1,192,994. Art of and mold for making rubber tires. M. A. Dees, assignor to American Tire Co.—both of St. Louis, Mo.

THE UNITED KINGDOM

4,139 (1915). Vulcanizing india rubber. E. T. Fenwick, 600 F street, Washington.

4,140 (1915). Machine for producing inlaid patterns of rubber in the form of sheeting or tiling. E. T. Fenwick, 600 F street, Washington.

4,541 (1915). Desulphurizing caoutchouc; diffusion apparatus. H. Debauge, 32 Avenue Montaigne, Paris.

5,116 (1915). Gumming telegraph tapes. G. A. E. Purvis, Chesterford Road, Manor Park, London.

5,218 (1915). Cutting or trimming sheet material. E. Harrison, Brook Cottage, Leyland, near Preston, Lancashire.

CANADA.

168,555. Tire molding machine. Gutta Percha & Rubber Limited, assignee of J. H. Coffey and J. H. Coffey, Jr.—all of Toronto, Ontario, Canada.

168,861. Fabric winding apparatus. Miller Rubber Co., assignee of F. F. Brucker—both of Akron, Ohio.

168,994. Rubber sole rolling machine. United Shoe Machinery Co., of Canada, Limited, Maisonneuve, Quebec, Canada, assignee of E. E. Winkley, Lynn, Mass.

THE FRENCH REPUBLIC.

479,698 (September 9, 1915). Improvements in vulcanizers. The Goodyear Tire & Rubber Co.

479,736 (September 14, 1915). Improvements in apparatus for treating plastic masses. Rubber Regenerating Co.

PROCESS PATENTS.

PROCESS OF MAKING HOSE. The inner tube or lining is made on a tubing machine and semi-cured, after which a fabric cover is woven on a circular loom and placed over the tube when in a collapsed condition. The tube is then inflated, and another cover put on by passing it through a tubing machine, and finally the hose is vulcanized in any suitable way. [A. T. Hopkins, Cleveland, Ohio, assignor to The Mechanical Rubber Co., Cleveland, Ohio. United States patent No. 1,190,292.]

PROCESS OF FORMING ARTICLES FROM PLASTIC MATERIALS. The materials are reduced to a powder and a light coating sifted upon the mold which is then heated to expel the gases and render the material plastic. Another thin coating is sifted upon the previous layer and the mold again heated. This operation is repeated until the required amount of material is in the mold, which is then closed and subjected to pressure, heat and finally cooled. [W. J. Burns, assignor to The Peerless Vulcanite Co.—both of Bridgeport, Connecticut. United States patent No. 1,190,510.]

MOLDING HOT WATER BOTTLES. The parts are semi-cured in a mold and then removed, stripped from the core and again assembled with a T-shaped binder strip of quick curing stock between the edges. The bottle is then placed in the mold, partly inflated and fully cured with heat and pressure, producing a seamless article. [N. D. Crawford, Elizabeth, New Jersey, assignor to The Mechanical Rubber Co., Cleveland, Ohio. United States patent No. 1,190,731.]

SOLID TIRES AND TREADS OF PNEUMATIC TIRES. These are made by laying unwoven fibers side by side, forming strips, one fiber thick, that are then impregnated and enveloped in rubber. These strips are superimposed, forming a block from which sections are stamped, built up and vulcanized in the form of a solid tire or shoe, with the ends of the fibers presented to the wearing surfaces. [J. W. H. Dew, London, England. United States patent No. 1,191,876.]

MAKING ELASTIC LEATHER. Soft leather is stretched, coated with rubber cement and united to a piece of elastic fabric under tension. After the cement has dried, the tension is released and the elastic fabric is stripped from the leather, leaving the dried film of rubber on the leather. This is again stretched, coated with cement and united to the elastic fabric a second time. After drying, the tension is released and the leather and double film are again stripped from the elastic fabric. These operations are repeated until the leather has sufficient elastic material in and on it for the intended purpose. [M. Scheuer, assignor to Carrie Scheuer—both of New York City. United States patent No. 1,192,691.]

PROCESS OF TREATING TEXTILE MATERIALS. The fibers are carded or combed into substantially parallel lines and subjected to a vacuum to expel the gases, at the same time the material is impregnated with rubber solution. In the manufacture of tires, hose and other products from this material the fibers may be laid radially, diagonally or in a combination of ways. [R. B. Price, New York City, assignor to Rubber Regenerating Co., Mishawaka, Indiana. United States patent No. 1,192,794.]

PROCESS PATENTS.

THE UNITED STATES.

1,193,883. Method of producing articles of a vulcanizable plastic. A. G. Emery, Brooklyn, N. Y., assignor to Rubber Regenerating Co., Mishawaka, Ind.

1,194,245. Marking insulated wire. T. J. Seward, assignor to The Electric Cable Co.—both of Bridgeport, Conn.

CANADA.

168,554. Process of molding and vulcanizing tires. The Gutta Percha and Rubber, Limited, assignee of J. H. Coffey and J. H. Coffey, Jr. —all of Toronto, Ontario, Canada.

THE FRENCH REPUBLIC.

479,785 (September 20, 1915). Method for treating rubber and similar substances. Rubber Regenerating Co.

479,806 (September 22, 1915). Process for manufacturing articles of vulcanized plastic materials. Rubber Regenerating Co.

The Editor's Book Table.

FUNDAMENTALS OF A COST SYSTEM FOR MANUFACTURERS. A System of Accounts for Retail Merchants. By Robert E. Belt and R. W. Gardiner, Federal Trade Commission, Washington, D. C. [Paper, 8vo, 32 and 19 pages, respectively.]

TWO small but comprehensive pamphlets have been published under the direction of Edward M. Hurley, Chairman of the Federal Trade Commission, Washington, for distribution to manufacturers and merchants throughout the United States. These books not only show the importance of a thorough system of costs for manufacturers and a complete system of accounting for retail merchants, but give the various details for installing these systems, with a thoroughness and simplicity which should enable anyone to install such a system in his business, whether it be large or small. Every item which enters into costs is explained, and methods are shown for securing the facts, and arranging the forms for recording them. These books, we understand, are distributed free, and can be obtained by addressing the Federal Trade Commission at Washington, D. C.

ACCEPTANCES: CIRCULARS, REGULATIONS AND INFORMAL Rulings of the Federal Reserve Board, including Opinions of Counsel. National City Bank of New York. [Paper, 32 pages.]

This little book gives an explanation of the use of acceptances by banks in the way of business; explains the manner of their use; shows forms and specimens of bills drawn in foreign countries or locally; gives circulars and regulations of the Federal Reserve Board on acceptances, together with legal rulings and explanations. The book is a concise and valuable guide for those who have dealings with the banks, and may well find place in the offices of many business establishments.

PERSONAL REMINISCENCES OF JAMES MAPES DODGE. BY Charles Piez. [Paper, 24 pages, with portrait.]

Mr. Piez was for many years intimately connected with the late Mr. Dodge, and his tribute to the memory of the latter is a graceful one, showing not only Mr. Dodge's broad grasp of mechanical and business problems, but telling of the various vicissitudes of the development of the Link-Belt Co., of which he was the executive as well as the engineering head. The booklet is an interesting one, has a fine portrait of Mr. Dodge, and has also several other interesting illustrations showing in detail some of the problems which he solved. It will undoubtedly be read with interest by all who had the honor of his acquaintance.

TARIFF SYSTEMS OF SOUTH AMERICAN COUNTRIES. BY Frank R. Rutter, Department of Commerce, Washington, D. C. [8vo, 308 pages. Price, 25 cents.]

This book was prepared primarily for the use of exporters and gives full information regarding South American tariffs and customs methods, describing, under each country, the system in force. Those who know how intricate are the tariffs, with the various surtaxes and the heavy fines imposed for non-compliance with details, will appreciate the exactness and thoroughness of detail of this report, written after personal investigation and years of study, by Dr. Rutter, who is assistant chief of the Bureau of Foreign and Domestic Commerce and was formerly chief of the Division of Foreign Tariffs of that bureau. This report also gives export duties, in which it is noted the export duties exacted on rubber, in Brazil, Bolivia and Peru.

PRACTICAL SAFETY METHODS AND DEVICES. BY GEORGE Alvin Cowee. D. Van Nostrand Co., New York City. [8vo, 434 pages. Price $3 net.]

It is claimed that industrial accidents cost this country 35,000 human lives and more than $500,000,000 annually, and in addition to this, other serious injuries and minor accidents bring the number well up to 2,500,000 each year. It is to arouse interest in the prevention of such accidents and to explain how this can be brought about, that this book is published. It gives descriptions of tried and proven methods and devices, rules for manufacturing establishments, and the general principles for securing a larger degree of safety for all classes of industrial workers. The book is divided into 37 chapters, and is illustrated by more than 125 pictures and diagrams of safety devices. It has chapters on welfare work and on first aid to the injured; a brief classification of occupational diseases; rules for fire drills and special chapters devoted to accidents from fires, boilers, engines, elevators, electric transmission, tools and various lines of machinery, and in construction work. In the preface it is stated that no attempt has been made to cover the subject in all its branches and that an exhaustive treatment is altogether impossible within the limits of a single book, but that the general principles suggested will be useful in special and exceptional applications not specifically described in its pages.

THE SEVENTEENTH YEAR BOOK AND ANNUAL REPORT OF The Rubber Club of America, Inc., Prepared by the Secretary.

The year book of The Rubber Club of America, Inc., just issued, is an ambitious publication of nearly 100 pages, containing a large amount of information regarding the club, its membership, its constitution, and its various committees, with the report of President George B. Hodgman and that of Secretary Harry S. Vorhis. The reports of the directors' and committee meetings give details as to the doings of those bodies. The report of the sixteenth annual banquet gives the speeches in full and, last but not least important, are the membership lists of firm, associate and honorary members. On the last two pages are given the names of members who died during the past year. Fine half-tone double page pictures are shown of the sixteenth annual outing at Lowell, Massachusetts, and the sixteenth annual banquet at the Waldorf-Astoria, New York City.

NEW TRADE PUBLICATIONS.

THE Link-Belt Co., Chicago, Illinois, is sending out No. 275, giving the revised price list, effective July 15, of the many different lines of goods manufactured by this company. The pamphlet is essentially a business one, full of facts and figures, and is intended to supersede all previous catalogs and price lists of the company.

* * *

The Racine Rubber Co., Racine, Wisconsin, is sending out a very attractive little booklet entitled "The How and Why of Racine Tires," giving descriptions and pictures of the various processes in the making of these tires, from the securing of the rubber to the wrapping and shipping of the finished product. The various styles of treads are shown and figures for the tire user are given, showing the proper pressure of inflation in the different sectional sizes; the table of weights to be used with tires of different dimensions; some directions for repairing; adjustment of brakes and other instructions which are likely to insure good service from these tires. The center of the book contains a bird's-eye view of the factory printed in two colors, as are several of the other illustrations in the book.

* * *

The B. F. Goodrich Co., Akron, Ohio, is distributing a "Goodrich News Service" which is in the nature of posters or cards for use in the windows of the various agencies of this company. Two recent ones are, respectively, an outline map of the United States, over which are shown a large number of automobiles and motor trucks, and the other, a picture of a prairie schooner

as compared with an automobile with similar furnishings, one showing the first trip, and another the present trip, of a pioneer over the old Oregon trail. The pictures are interesting, and are likely to attract the attention of automobile users and others to the goods of this company.

* * *

The Hardware & Supply Co., Akron, Ohio, sends out a very neat cloth-bound book giving a list, with prices, of the many tools which it makes for rubber workers. The book is well illustrated, showing in detail the many styles of tools made and in some cases explaining their use. There are several blank pages arranged for such additions as may be sent from the firm, or memoranda to be made by the holder of the catalog.

IMPROVEMENTS IN DEEP SEA DIVING.

In the July number, Spanish edition, of the Bulletin of the Pan American Union is an interesting article on deep sea diving. It states that companies are being organized to recover sunken ships and the valuable treasures which have gone down with them, by means of great improvements in deep sea diving resulting from experiments conducted under the auspices of the United States Navy. This article states that not until the elasticity and imperviousness to water of vulcanized rubber became known did the modern diving apparatus become possible. This apparatus is fully described, and is similar in details to what has already appeared in THE INDIA RUBBER WORLD (January, 1915, page 189). It is now stated that as a diver can descend to depths of 250 to 300 feet, it seems feasible to salvage ships and treasures that have lain at the bottom of the sea for many years. Examples are given of many such which are within that distance of the surface, also a list of cargoes of gold, silver, bullion, securities and jewelry, all of which it might be possible to recover because of the improvements in diving apparatus which are due to the experiments under the direction of the United States Navy.

COMBINED TIRE RACK AND WINDOW CARD.

Tire manufacturers appreciate the value of window advertising and many novel cut-outs and cards are made for such display. The Pennsylvania Rubber Co., Jeannette, Pennsylvania, is sending to its agencies racks of heavy, warp-proof, 15-ply cardboard. Each rack contains a slot in which a tire can be inserted in such manner that each supports the other, thus eliminating brackets or easels. These racks are handsomely printed, each calling attention to the especial type of tire exhibited, and, altogether, form a most atractive way of showing the tires to advantage.

Interesting Letters from Our Readers.

BUYING RUBBER DIRECT IN THE EAST.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR: The article in your July number entitled "A Protest From London," on the relative merits of shipping rubber direct from the East to America, and shipping via London, has been read with interest, and it certainly would be against the traditional English policy for the government to adopt any such policy as the "Financier" apparently desires them to adopt. The chief argument, however, which should influence the British public against the plan of shipping all the rubber via London is that this will diminish the profits of the British investor. A few of the investors indeed may profit by it, namely the London agents to whom the rubber would be consigned. These people are usually large shareholders, and in addition to their dividends they would get commissions. But what about all the other shareholders? Rubber will not become more valuable by having passed through the port of London. The value of one pound of rubber to an American manufacturer will be exactly the same, and all the extra cost of freight, handling, London commissions, etc., will have to be debited, directly or indirectly, to the producing company, and from all the conversations which I have had with planters in the East I am convinced that they are thoroughly alive to this fact. A country does not grow wealthy through opposing the ordinary economic laws.

It is also particularly interesting to note that it is the "Financier" which is saying that rubber should come by way of London, and that your contemporary, "The India Rubber Journal" of London, which is the principal trade paper there, takes quite the opposite view in its issue of July 15 under the heading of "Eastern Rubber Sales." The whole of this article is well worth reading, and the suggestion which they make is a good one, that the London firms who wish to continue handling this rubber should open branches in the Eastern ports. This would be a good plan. They would earn the same commissions which they are earning now, and yet they would do useful work for their living, instead of simply duplicating other people's work in a useless manner.

Yours truly,
A BUYER IN EASTERN MARKETS.

FROM A WELL KNOWN EDITOR AND ESSAYIST.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR: Your leading editorial in the August issue, entitled "Preparedness—Looking Backward," and taking the unique form of an imaginative letter, will set many men, old as well as young in the trade, to thinking. There is ever a tendency to become so thoroughly engrossed with one's own problems of the day as to fail to give due thought to the morrow or to see things from other than one's own, often narrow viewpoint, and there is no better way for the prophetic thinker to enlighten those who look to him for inspiration than to picture as lucidly as may be a possible outcome of present conditions, their consequences and avoidance in years to come. In doing this so logically, you have sounded a much needed warning at a time when an object lesson is being enacted across the seas which emphasizes its significance most emphatically.

We have heard much recently about industrial preparedness in the abstract. For the most part it has been mere exhortation without concrete particulars, but you seem to have brought the entire rubber industry into true perspective in its relation to military expediency, to have appreciated its weaknesses and to have pointed out likely means of remedy. Rubber has come to occupy so important a place in the processes of war, as well as of peace, that there is great need of constructive suggestions such as yours emanating from an authority untrammeled by entangling alliances of the trade, and possessed of a broader

vision than that of many who are so closely confined to their own particular departments of it as to have lost their sense of proportion. You have penned a vivid picture of what might reasonably be expected to ensue should this country under present conditions find itself besieged as Germany now is. The facts are not overstated; every word rings true, while the graphic manner of portrayal you adopted, more certainly than commonplace direct statement, will attract the attention and stimulate the thought of those conservative men whose first line of defense in the face of proposed innovations invariably is that they "must be shown."

German industrial preparedness holds much to inspire admiration and to teach us many wholesome lessons, particularly in the field of chemistry. Not always have the fundamental ideas been of native origin; England and America have provided untold inspiration. Indeed, German scientists in many lines have borrowed generously from all available sources, but by the application of that phlegmatic perseverance and painstaking thoroughness characteristic of the race, they have almost without exception developed a state of higher efficiency. The light of scientific research has been turned upon even the commonplaces of life, and under pressure of war necessity the resourcefulness with which almost every by-product has been utilized and the ingenuity with which many available, and in certain instances previously neglected, materials have been made to serve new purposes, is little short of marvelous.

Germany has developed her natural resources and economic opportunities to the very limit, and by intelligent conservation and clever scientific use has done the utmost with all imported commodities, yet she now finds herself greatly in need of a few vital things, notably such metals as copper and nickel and also crude rubber. This serious shortage of raw materials indicates indisputably the importance to every nation of becoming, or paving the way to become, virtually independent in anticipation of a state of war covering a period of years. For many small nations and because of geographical and attendant conditions this is physically impossible, but their hazard is correspondingly less. The United States, however, the richest and most envied in the family of nations, may well take heed lest at some future time jealous members of that family attempt to crush her. While it would be difficult and probably impossible for an enemy to maintain an effectual blockade of our entire seacoast, our imports could be seriously interrupted and a large percentage of cargoes seized or destroyed.

Preparedness constitutes the best insurance against war, and that infers industrial, quite as much as military, preparedness, for it is through the former that the latter is possible. We must place ourselves in a position to be independent of imports if necessary. We must look to our raw materials and develop a source and supply of each and every one of them within our borders, at least sufficient to meet military needs. With raw materials in ample quantity, the various processes of refinement and manufacture will practically take care of themselves. Our chemists, electricians, and machinists are as intelligent and ingenious as any in the world. Their weakness has been a natural reluctance to enter certain fields which had become highly developed abroad. Not until the outbreak of the present war in Europe did we realize fully our dependence upon Germany in several branches of chemistry, notably the many ramifications of the coal-tar industry. But in this particular instance we have the raw material, our chemists are grappling with the intricate niceties which had become so highly specialized along the Rhine, substantial progress is being made, and while it will take time, the day will come when we shall be able to manufacture any and all coal-tar derivatives if necessary.

Our country is so vast in extent, so varied in soil and climate, so rich in natural resources, especially minerals and metals, that preparedness is not so much a problem as a matter of application, a matter of setting to work with the knowledge we have and accomplishing the desired end. A bountiful Providence has blessed us with most of the essentials of peaceful life and of defense. Most of the few we lack, among which crude rubber stands first, are of an agricultural character and, thanks to the variety of our soil and climate, may be grown at home. Steps ought to be taken to supply these materials at once; it is our patriotic duty, and in times of peace as in times of war untold fortunes await the successful pioneers. Intensive methods should be resorted to if necessary. They have been applied to the production of table delicacies that we may have fruits and vegetables out of season and in unfavorable latitudes, also that staple crops may be grown on arid lands, so why not deal similarly with these great problems of exigency?

When you suggest the possibilities of the *Picradenia*, the *Ekanda* root and rubber producers of the guayule and grass rubber sort, you point out the foundation of a great American industry of the future. Here is constructive work of superlative importance for our botanists and rubber experts, offering a financial reward in proportion to the task. In the manufacturing end of the rubber industry America takes first place, and what we need to make it secure should war ever become inevitable, is an increasingly productive source of crude rubber grown at home. The project is feasible, laudable and should and would receive the hearty support of the trade.

Let me suggest that marked copies of this editorial be sent to the leading agricultural periodicals in the hope that the editors will reprint it and thereby give their more enterprising readers a valuable suggestion for investigation and experiment. Both the feasibility and the opportunity to grow rubber producing plants in the United States deserves the widest publicity.

Very truly yours,

PHIL. M. RILEY.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless, they are of interest, not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

[204.] A correspondent has inquired for the address of manufacturers of the "Jolly Spiral Balance" and "Nicholson Hydrometer."

[205.] Inquiry has been received for builders of machines for turning and crimping the edge of rubber bathing caps.

[206.] The name of a manufacturer of machinery for making balata packing is requested.

[207.] We have been asked for information concerning the makers of a motor-driven mold cleaning device.

[208.] The name of a manufacturer of carbon bisulphide is requested.

[209.] Information is sought regarding the process of making a rubber cement which will retain its elasticity after application.

[210.] We are requested to supply the names of manufacturers of inner tube mandrels.

[211.] A correspondent desires names of manufacturers of a Black Kraft or black pattern wrapping paper suitable for use as wrapping for automobile tires.

[212.] Inquiry has been received for names of manufacturers of machinery for making rubber tiling.

[213.] We are asked who can supply tools for tapping *Castilloa* rubber trees.

[214.] Names of manufacturers of transparent nipples are requested.

[215.] An exporter of automobile tires and automobile outfits has requested names of manufacturers of these articles.

[216.] Names and addresses of rubber tire machinery manufacturers have been requested.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A firm in France wishes to be placed in communication with American manufacturers of washing machines and wringers with rubber rollers. Report No. 21,933.

Agencies are desired for Chile and Argentina from American manufacturers of rubber goods. Report No. 21,941.

Commercial relations are desired in Denmark with American manufacturers of rubber tires. Report No. 21,953.

A physical culture instructor in Brazil wishes to receive catalogs, price lists, etc., of footballs and other athletic and sporting goods. Report No. 22,090.

A manufacturer in Spain is desirous of importing tires for bicycles. Report No. 22,092.

A newspaper in the Far East with stationery and job printing departments desires to obtain connections in the United States with dealers in rubber stamps. Report No. 22,131.

A dealer in France desires to purchase gold nibs and barrels with necessary parts for the manufacture of fountain pens. Report No. 22,139.

A firm in Spain is in the market for rubber erasers. Report No. 22,156.

A firm in the United States wishes to secure for transmittal to correspondents in Japan, quotations and literature covering cotton and silk elastic for garters and braces. Report No. 22,158.

Additional agencies are sought in Argentina for the sale of rubber heels and soles and other American products. Report No. 22,173.

A firm in the Netherlands desires to get in touch with American manufacturers and exporters of rubber nipples and tubes for nursing bottles. Report No. 22,190.

A Norwegian import firm wishes to communicate with American manufacturers of automobile tires and accessories. Report No. 22,195.

JUDICIAL DECISIONS.

BUFFALO SPECIALTY CO. v. VAN CLEEFF. In an action for the wrongful use of the plaintiff's trade-mark name "Neverleak," in connection with the manufacture and sale of "tire fluids," it appeared that the plaintiff manufactured the tire fluid according to a secret formula. Another party obtained a patent for a vehicle tire, which consisted of a combination of a pneumatic tire and a free-flowing sealing agent within the air chamber. The plaintiff purchased this patent, and thereafter used, in connection with its tire fluid, a label on which appeared a circle presenting a pneumatic tire within which were the words: "Patented U. S. A. Foundation patent No. 578,551." Below the circle were statements that this was the foundation patent, and covered the use of any liquid, semi-liquid, paste, powder, or compound, capable of being converted into or used in connection with any liquid in any pneumatic tire for closing punctures; that the plaintiff's tire fluid was manufactured and sold under and by the owner of such patent, and that persons making, selling, or using any other such fluid were infringers. The Circuit Court of Appeals held that the plaintiff was justified in buying the patent to avoid infringing it, and the label in question was not such an abuse of its patent rights as deprived it of its pre-existing property right in its trade-name. If, as the court assumed, the patented tire had no generic name, and all pneumatic tires, whether containing a free flowing sealing agent or not, were made and sold under the marks and names of their manufacturers, the expiration of the patent could not authorize the public to use the trade-name of the unpatented element, under the rule that the expiration of the patent authorizes the use of the name of the patented article, where it has become a generic name.

All that could be said from the face of the label was that the plaintiff needlessly gave true information of the fact that prior to March 9, 1914, the patent was in force, and inferentially that it had been owned by the plaintiff and used in some way not disclosed by the label. This, it was held, did not deprive the plaintiff of its right to equitable relief against piracy of its trade-name and unfair competition. [The Federal Reporter, Vol. 227—page 391.]

PERLMAN v. STANDARD WELDING CO. The Perlman patent No. 1,052,270, for a wheel for automobiles, the special feature of which is a demountable rim. Held not anticipated, valid, and infringed. [The Federal Reporter, Vol. 231—page 734.]

This case was reported at length in the May 1916 issue of THE INDIA RUBBER WORLD.

MACDONNELL v. VORHEES RUBBER MANUFACTURING CO. The Federal District Court D, New Jersey, holds that the MacDonnell patent, No. 981,208, for an improvement in pneumatic tires, which consists in rendering the inner tube self-healing in case of puncture, by means of a wrapping or stay strip of canvas, which is incapable of stretching transversely, but capable of stretching in a direction longitudinally of the tire, was not anticipated, and discloses invention; and also that it was infringed by the tubes made in accordance with Brown's application for patent, serial No. 704,637. [The Federal Reporter, Vol. 227—page 898.]

SPALDING v. GAMAGE. The case in which A. G. Spalding & Bros., the well-known American sporting goods concern, claimed damages against A. W. Gamage, Limited, the large London sporting goods firm, in respect to passing off condemned footballs which had been sold by the plaintiffs as waste rubber, as "Spalding's Improved Sewn Orb Balls," which was reported in the May 1915 issue of THE INDIA RUBBER WORLD, came recently before one of the official referees of the High Courts of Justice, in London, for assessment of damages.

After hearing evidence which lasted many days, the official referee made his report to the judge, who found on the whole of the evidence that the plaintiffs were injured by the acts of the defendants, and that they were entitled to recover the sum of £2,000 [$9,733] for injury to their reputation.

LOVELL-MCCONNELL MANUFACTURING CO. v. ORIENTAL RUBBER SUPPLY CO. This suit was brought under the patent laws of the United States for infringement of the United States letters patent No. 1,120,057, for a diaphragm horn for automobiles.

The United States Circuit Court of Appeals, Second Circuit, held that the taking of two steps in changing a prior device, both obvious and not involving invention, and unpatentable when taken separately, does not involve invention and become patentable when taken in unison. A combination of old elements, to be patentable, must produce a new result or effect in the combined forces or processes from that given by their separate parts.

Patent No. 1,120,057 was therefore void for lack of invention, in view of the prior art.

Though a rubber company was involved in this case, the disputed patent contained no rubber. [The Federal Reporter, Vol. 231—page 391.]

MICHELIN TIRE CO. v. ROBBINS AND OTHERS. This case was an appeal by the defendant party from a judgment for plaintiff. Judgment as against the defendant was reversed, and complaint dismissed as to him, the court of appeal holding that where a tire company knew that a garage business was transferred to new proprietors, and accepted them as the persons with whom it would fulfill its contract, intending to release the old proprietor from further performance of the contract, and accept the new in his place as parties, there was a "novation." [New York Supplement, Vol. 159—page 256.]

[*Novation (in law), the substitution of a new obligation for an old one, in this case the substitution of a new contracting party for Robbins, the original one.*]

New Goods and Specialties.

THE NEW NAUGAHYDE RAZOR STROP.

NOVELTIES in rubber designed to supplement, if not replace leather, are constantly developing these days when the price of leather is high and still advancing.

The difficulty of making a complete replacement of leather is a handicap seldom overcome, but in the case of the Naugahyde Razor Strop, developed during the past year, this problem seems to have been successfully met.

It has been developed and tested by the latest scientific methods, with most excellent results.

Its composition is such it will put a keen edge on the finest quality of razor with very limited stropping, only a few strokes being necessary to obtain the desired edge.

The abrasive material in the strop is so combined that it sharpens the razor quickly, and at the same time prevents the edge from wearing down and becoming round. It is seldom necessary to hone a razor sharpened on this strop.

The strops are made in two styles and sizes, with either nickel or gun metal swivels. They may be had in double strops with the sharpening and finish sides separated, or in single strops with the two sides combined. [Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut.]

RINGMETER GARDEN HOSE.

The continuous-length hose shown in the accompanying illustration is self-measuring, owing to the flat rings of rubber which are placed upon it exactly one foot apart. This is a great convenience, as it is only necessary to count one foot for every ring as the hose is unwound. This hose is of the molded type and consists of a seamless tube covered with plies of braided

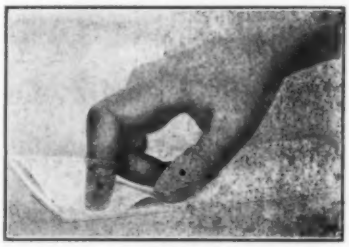
fabric and a durable, corrugated cover. It is made in three sizes—½-inch, ⅝-inch and ¾-inch. [Quaker City Rubber Co., Philadelphia, Pennsylvania.]

VULCALOSE SANITARY RUBBER TOILET SEAT.

The advantages of a one-piece toilet seat over the old style wooden seat are self-evident. Disease germs can find no lodging place; there are no seams or joints to open up, and it will not warp, crack nor split. The varnish on wooden seats is soon eaten off by acids used for cleaning, as well as by uric acid, but this rubber seat has an ebony-black finish, polished surface which will not wear off nor sustain injury through the use of sulphuric acid, carbolic acid or any cleanser or disinfectant. The fittings are nickel-plate throughout, and claimed to be unbreakable under any ordinary use. The three soft rubber bumpers are of peculiar design, and are placed at three bearing points. They are vulcanized into the hard rubber seat, and therefore cannot become loose. [The Vulcalose Co., Chicago, Illinois.]

"UNIKA" FINGER COT.

These rubber finger cots are designed as convenient and useful aids in the work of mail and office clerks, cashiers and bank tellers, their non-slipping qualities being of decided advantage in sorting mail, counting money and in general office work. They are also in demand by fruit packers. They are intended to be worn on the thumb, as well as on the forefinger, and are supplied in assorted sizes. A feature of value is the arrangement of round openings for ventilation, making long continued wear of these protective coverings possible with a greater degree of comfort than unventilated ones. [United States Rubber Co., New York City.]



CHIN MASK AND FROWN BAND.

The purpose of rubber chin masks is well known: When worn during the hours of sleep, they hold the relaxed muscles in place and prevent the sagging which forms the unsightly double chin. A special advantage of the mask here illustrated lies in the fact that it extends further up on the face than is customary, covering the upper lip and acting as a remover of the nose-to-mouth lines. It also extends down lower than some other chin masks, tending to whiten the skin of the throat and remove the discolorations caused by high collars. This mask is fastened by means of tapes, which can be adjusted, if closer tension is desired, by slipping the hook and eye down on the tapes, thus shortening the lower tapes.

A rubber frown band is also shown, the use of which prevents the frown and lines in the forehead. [Miss Lillian Bender, Stockton, California.]

THE "NEW PARAMOUNT" TENNIS BALL.

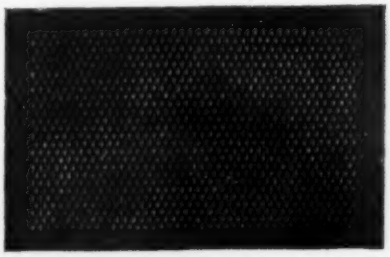
The "Paramount" tennis ball, although successfully marketed for some time, has been the subject of continued experimentation to still further improve its resiliency. The results are claimed to be a greatly added resiliency, with no impairment of the many other sterling qualities of the ball. Tennis balls are ordinarily made in four sections and inflated with a hollow needle that penetrates a self-closing rubber plug inside the ball, but the "New Paramount," through its special patented construction, is made in two pieces, without a plug, thereby insuring a more perfect bounding article. [A. J. Reach Co., Philadelphia, Pennsylvania.]

WATERPROOF FABRIC AND GARMENTS.

A new waterproof fabric has been perfected for the manufacture of women's coats, which is radically different from any previously placed upon the market. It is named "Silvareign," because of its shimmer of silver or gold, and is made in a number of beautiful tints. It combines the lightest weight of silk with rubber, and is made up in a number of attractive lines of garments having that style which commends them for sport and motor coats for fair weather wear, sunlight imparting to them a strikingly beautiful iridescence, while their water-resisting quality makes them ideal for rainy weather. The fabric was invented, its manufacturing problems solved and the lines of garment designed by the manufacturer, who has patented the material and trademarked the name, and who will enter upon a national advertising campaign early this fall. [E. Kenyon Co., Brooklyn, New York.]

BOWLING MAT AND FOOT-GRIP.

Bowling on the green is more general in England than here, although evidence that it once was popular in this country is shown by the name of an open square in the southern part of New York City called "Bowling Green." To protect the lawns from excessive wear during this game a rubber mat with a corrugated surface, such as is shown herewith, is used for the players to stand upon. The standard size for this mat is 22 by 14 inches, but other sizes are furnished as desired.



The side view of a rubber overshoe also used for bowling and for curling shows the high back section and the toe cap which hold the rubber sole on the foot. The back section is overlaid with an extra thickness of tough rubber so molded as to grasp and hold firmly to the shoe. The sole is made perfectly flat, in order not to damage the surface of bowling greens, and it provides a non-slipping foothold on the keenest green or ice. This style of rubber overshoe would also prove convenient and useful in any other game played on lawns, or as a substitute for tennis shoes or "sneakers" in an indoor bowling alley. [The Waverley Rubber Co., Limited, Edinburgh, Scotland.]

"IMPERIAL" RUBBER SHEETING.

There is an ever increasing demand for high quality rubber sheeting, and it is claimed that in the "Imperial" sheeting an article has been evolved, by laboratory experimentation covering two years, which combines all the essentials for a sheeting that will withstand without injury the most severe tests of sterilization, resistance to steam under pressure, dry heat, boiling water, acid, alkali and saline solutions, chloroform, ether, lysol, urine, oxidation and gasolene. Moreover, the manufacturers of the "Imperial" line claim to have discovered a secret process which prevents maroon, black or tan colored sheeting from fading. [Rosenwald & Weil, Chicago, Illinois.]

JONES "NEVER-LOOSEN" RUBBER HEELS.

In the rubber heel here illustrated a specially prepared strip of leather is vulcanized to the outer edge of the rubber heel when made, forming a leather rand which can be nailed close to the edge on any shoe heel, even one with composition or fiber lifts. There are no washers in this heel, the leather rand acting as a substitute, holding the nails as does the "lift" of a leather heel. This not only obviates the labor of cementing the edges of the rubber heel to the shoe but prevents the loosening and spreading to which cemented rubber heels are claimed to be liable. A chamber or air space gives a pneumatic cushion, adding to its resiliency. These heels are closely trimmed, fitted to any shape heel, and can be applied correctly by even the most inexperienced workman. [Jones "Never-Loosen" Rubber Heel Co., New York City.]

HYDROMETER MADE OF RUBBER.

Testers of non-freezing solutions, used for cooling gasolene engines, are usually made of glass, and are easily broken. An unusually durable device for this purpose consists of a specially made rubber ball attached to a tag bearing the necessary directions for using it as a tester. To secure correct proportions, these balls are constructed in halves, each half being tested individually as to its specific gravity and then assembled with another half of such gravity that the two together have the same specific gravity as the correct anti-freeze solution for which the ball is to be used. Different balls are made for solutions of as many different sorts and they indicate, by floating or sinking, whether the solutions are too weak or too strong. This tester, or hydrometer, can be used to test the solution directly in the radiator by dropping the ball through the filling cap, or by drawing the mixture into a receptacle and dropping the ball in it. If it floats, more alcohol and glycerine should be added to the mixture, while if it sinks there is perfect safety. When heated, the rubber ball expands at practically the same rate as the solution being tested, making it unnecessary to correct for any temperature differences other than allowing the ball to remain in the solution about one minute before observing whether it floats or sinks. [The Liquid Tester Co., Lancaster, Ohio.]

A SINGLE TEXTURE RAINCOAT FABRIC.

Scintella is a dress goods fabric that has recently claimed attention in the rubber clothing trade as an excellent material for single texture raincoats for women. It is made of imported artificial silk and worsted and, as its name indicates, it scintillates a silken, silvery glow over a surface of a darker tone or color. Being of light weight, yet having sufficient body, it

lends itself readily to straight effects or to the soft folds and fulness now popular in the newest styles. Supple and pliable, with enough resistance to prevent wrinkles, it makes a desirable material for week-end garments, as it packs snugly without crushing. It can be obtained in a variety of colors, though the black and white combination is most popular for single texture women's raincoats, auto coats, travel coats and golf capes. [B. Priestly & Co., New York City.]

THE "ALL-TOGETHER POUCH."

A new idea in rubber-lined tobacco pouches admits of carrying the pipe in the same receptacle. It is more convenient than using two cases and keeps the pipe cleaner than if carried loose in the pocket. Separate compartments contain the tobacco and pipe and the whole is claimed to be no less compact and easy to handle than the ordinary tobacco pouch. The "All-Together Pouch" is made of doeskin and lined with high grade rubber of English manufacture. [M M Importing Co., New York City.]

AMPHIBIAN SANDALS.

A British manufacturer of tennis, gymnasium and other sporting shoes has put on the market a sandal intended for children which he calls the "Amphibian." It has an open upper, being fastened over the instep by straps, as shown in the illustration. Its distinctive feature lies in its rubber sole, which makes it a comfortable and springy shoe under all circumstances and enables the wearer to walk over wet grass or moist beaches and still keep dry-shod. [The Victoria Rubber Co., Limited, Edinburgh, Scotland.]

"F. & S. COLONEL" GOLF BALL.

In the eyes of every player a golf ball that is long on the drive, but slow on the putting green; that flies fast and far from the tee, but stops dead on the pitch, would be the acme of perfection as an aid to high scoring. The "F. & S. Colonel" ball, evolved after several years' experimentation, is credited with these exceptional qualities. It is claimed that the movable center in the ball adds accuracy to its flight when driven from the tee; and on the approach, when given a back-spin, this center revolving against the momentum of the ball, causes it to drop dead, and in putting makes it as slow as a gutta percha ball. The recent patent covering its construction is described elsewhere in this issue. [St. Mungo Manufacturing Co. of America, Newark, New Jersey.]

TOY BALLOON VALVES.

THE manufacture of toy balloons is a highly specialized branch of the rubber business, requiring technical knowledge and special equipment, the successful development of which is due almost wholly to practical experience. There are innumerable types of these attractive toys made in variegated colors and all sorts of shapes, including effigies of various animals, imitations of footballs, watermelons and dirigibles. They are not all equipped with self-closing valves, which feature is a decided advantage as it permits inflation and deflation at will.

The original type of air valve was a simple disk of wood, around which the balloon neck was stretched. A round piece of thin sheet rubber was attached at one point to the inner part of the disk, covering the hole through which the balloon is inflated and acting as an air retaining valve.

These valves have been almost entirely superseded by the types shown in the illustration, that are interesting developments of the idea to make a cheap and satisfactory valve.

In the upper row are shown in side elevation three rubber types. Those on the right and left are molded, the one on the right being reinforced by a metal ring that is vulcanized in the lower part of the valve body. In both cases the air hole does not extend entirely through the body, sufficient stock being retained at the upper end which is afterwards slit, forming a flap that lifts when the balloon is inflated and closes by pressure from the enclosed air. A pin or match is inserted in the hole in the valve body and the valve raised, when it is desired to deflate the balloon.

A novel departure from the usual procedure is shown in the upper center view in which a small section of rubber tubing is employed as a closing auxiliary. This is slipped over the neck of the balloon which is then stretched over a round wooden

disk, provided with a hole in the center. When the balloon is inflated by the simple process of applying the lips to the wooden disk and blowing, the air is retained by giving the balloon a few turns to the right or left which closes the neck within the tube section. The air pressure against the end of the rubber tube prevents the neck from untwisting and the air is retained within the balloon. A few turns in the opposite direction will untwist the neck and the air then escapes.

In the lower row, inside views of the metal valves now in use are shown. These are stamped out of sheet tin and are all very similar in shape, size and design although there are some characteristics peculiar to each one which are of sufficient interest to describe in detail.

The one on the extreme left has a larger air opening than the others and the sides of the disk are straight, and formed with a projecting ear. This is bent down against the round disk of rubber sheet, holding a small section of it against the metal disk while the remaining portion of the rubber disk is free to act as an air valve.

The next valve is provided with an air opening of about ⅛ inch and the edges are beaded, forming a groove to retain the neck of the balloon. A piece of spring wire is given the peculiar form necessary to retain its position within the metal body and at the same time hold the rubber disk in place.

The third valve shows about the same construction as the previous ones, with the exception, however, that instead of a spring retainer a cover is provided and the rubber disk allowed to move freely within the valve body.

The metal valve on the extreme right retains the same size, shape and general construction of its predecessors but discards all previous methods of holding the thin rubber disk in place. This disk is made very similar to an ordinary pump valve and is held in place by an annular groove on the inside of the valve body.

It is estimated that there are 20,000,000 toy balloon valves made in the United States each year.

THE DOUBLE SERVICE NON-INFLATABLE TUBE.

A substitute for air in pneumatic tires which will retain all the resiliency displacement and easy riding qualities of compressed air is offered by the makers of the "airless" tube.

This is made in an arch shape similar to a tire design and fits the inside of the tire perfectly—being inserted exactly like an ordinary tube. It is built of specially compounded springy rubber and fabric of a thickness that will retain the weight of a car and its load and permits of deflation or displacement whenever an object is struck or passed over. Its action is therefore the same as the ordinary pneumatic tire when in use. This tube requires no inflation, and as it only contains ordinary atmospheric pressure of 18 degrees, there cannot be punctures or blow-outs.

The illustration shows the tube action when passing over an

object. There is a displacement of air and rubber exactly the same as a pneumatic tire which prevents vibration or bouncing and results in easy riding qualities. [The Double Service Tire & Rubber Co., Akron, Ohio.]

THE KAHN VALVE.

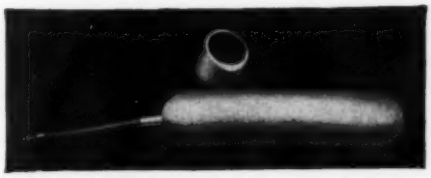
This new departure in tire valves combines a pressure gage and valve that in outward appearance is similar in size and shape to the ordinary inner tube valve. A novel feature is, that it can be set to the desired pressure and when that point is reached the unnecessary air is diverted through an outside port producing a whistling noise that serves as a warning. Referring to the illustration, the collar *C* is turned until a projection slips into one of the five slots marked 50, 60, 70, 80 and 90 pounds. The air is then turned on and when the point at which the valve has been set is reached, a check valve closes, due to the opening of the blow-off valve *E*, thus relieving the air pressure from the outside and allowing the pressure in the tire to close the inner check valve. All air now coming from the pump passes outside through the port *G*, with a whistling sound.

It is impossible to put more air into the tire than the pressure to which the valve has been set, as the area of the port *G* is greater than that of the inlet valve. The reason air does not escape through these ports before the desired pressure is reached is due to the pressure of a spring that acts on the blow-off valve and closes the ports until the pressure becomes greater than that of the spring.

Should it be desired to verify the tire pressure, the collar *C* is set at 80 and the top of the valve is pressed down. If the valve does not whistle it indicates that there is less than 80 pounds pressure. With the collar *C* set back to 70 pounds and the operation repeated, if the valve whistles it will indicate that the pressure is over 70 pounds. If it does not whistle at 70 the collar *C* is set back to 60 pounds and the operation repeated until the pressure in the tire is indicated. [Armstrong Rubber Co., Inc., New York City.]

A DEPENDABLE AIR BAG.

The tire repair air bag is a very useful accessory that usually receives scant attention until the time comes for the accomplishment of its important part in repair operations. Then it is resurrected from underneath the bench in a more or less neglected condition and expected to faithfully fulfil its duty. All air bags should be well made and well taken care of, that good service and reliable repairs shall be the result. The illustration shows one that is specially constructed in a manner to fulfil the peculiar duties of an air bag.



According to the maker, the lining and frictioned fabric are made with a special non-blooming rubber compound that will withstand several hundred vulcanizations without losing its usefulness. Strength has been considered by using sufficient plies of the best cotton duck in the body and the entire bag is constructed with the idea that first cost is considered subordinate to satisfactory service. [The American Rubber & Tire Co., Akron, Ohio.]

HOOD AND PURITAN TIRES.

The "Hood" and "Puritan" tires are claiming serious attention from motorists who are interested in obtaining results in mileage and freedom from tire troubles. The claim of the makers is that they are manufactured primarily to excel in quality and length of service, as a marked distinction from cheap and unguaranteed tires.

ARROW TREAD.

Among the points of superiority claimed for "Hood" tires may be mentioned that they are made with an extra ply of fabric, having on the small sizes one more, and on the larger, two more plies than the standard priced tire; the best quality of Egyptian fabric is used, every roll being tested before it is frictioned; the rubber is carefully selected from first quality Plantation and Para, and claimed to be compounded only with sulphur; the beads are locked in, and constructed to prevent rim cutting, while the cushion and breaker strips are made unusually wide, giving the tire extra strength; the depressed type tread is extra wide, and made of tough stock, and the arrow-shaped non-skid depressions have very sharp edges that hold the road by suction.

GRIPPER NON-SKID TREAD.

The unusually long mileage obtained from these tires makes the cost per mile of the tire very low, although the first cost is higher than that of the standard tire because of the extra construction. This may be seen from the fact that, during 1915, the loss on the tires which came back to the factory for adjustment, on the basis of 5,000 miles, was less than one-half of one per cent.

They are made for every size and style of rim, in clincher, quick detachable and straight side types. [Hood Rubber Co., Watertown, Massachusetts.]

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

News of the American Rubber Trade.

SEAMLESS RUBBER CO. SALESMEN CONVENE.

THE selling force of the Seamless Rubber Co., New Haven, Connecticut, recently held a convention in that city which, for enthusiasm and real business planning was most successful. The meetings lasted several days and were presided over by President James A. Murray, who informed the salesmen of the policy of broadening the field of operations by extended advertising in the national magazines and urged their cooperation. Each day was devoted to some special subject, the first being the plans for an aggressive campaign, the second for the discussion of methods of improving sales, a sample of every article made by the company being mounted on large screen frames for the salesmen's inspection, while sales arguments were formulated and discussed. One day was devoted to a demonstration and lecture on window trimming by Charles C. Stewart, of the Lee Advertising Service of New Haven, a temporary show window having been erected in which to illustrate the points of the lecture. The advertising campaign was explained by Frank L. Little, of the George Batten Advertising Agency of New York City. Various points regarding the coördination of the advertising and selling plans were given. The salesmen made their headquarters at the Hotel Taft, and the convention was fittingly rounded out by a banquet on the final evening.

WASTE MATERIAL DEALERS MEET.

A regular meeting of the National Association of Waste Material Dealers will be held September 19 and 20 at the Bellevue-Stratford hotel, Philadelphia, Pennsylvania. Besides the regular business of the association, it is expected that a considerable amount of time will be devoted to recreation, including automobile trips to places of interest in Philadelphia, excursions to Atlantic City, and a cabaret dinner. The committee having charge of the arrangements are Messrs. Murphy, Weil, White and McGarrity.

NEW CORPORATION WITH INCREASED CAPITAL.

The Vulcanized Rubber Co., Morrisville, Pennsylvania, which was incorporated under the laws of New Jersey in 1901, has sold and transferred all its property, assets, etc., to a new company bearing the same name, incorporated June 20, 1916, under the laws of Maine with a capital stock of $1,500,000 ($500,000—8 per cent cumulative preferred and $1,000,000 common) and a meeting of the stockholders has been called to dissolve the former company. The stockholders are to receive one share of preferred stock and one share of common stock in the new company for each share held in the older company.

THE S. & W. RUBBER MANUFACTURING CO., INC.

The S. & W. Rubber Manufacturing Co., Inc. (See list of incorporations in this issue) is erecting a modern brick factory at Nineteenth street and Sixth avenue, College Point, New York. The officers are: Arthur C. Squires, president; George Jeuch, secretary; John E. Wainwright, treasurer. Inner tubes, dental rubber, dental dam, toilet and bath sponges, bathing caps, rubber heels and other molded goods will be made. An experimental laboratory completely equipped with miniature rubber machinery will be installed for the purpose of instructing and demonstrating the art of manufacturing all kinds of rubber goods. Experimental work will be done and inventors of rubber articles assisted in perfecting their ideas. This department will be under the personal direction of Arthur C. Squires, who is amply qualified for the position by long and varied experience.

WILSON RUBBER CO. PROMISES WELL.

The Wilson Rubber Co., Canton, Ohio, notice of whose incorporation appears elsewhere in this issue, has leased the plant formerly occupied by the Canton Rubber Co. and will make a specialty at the outset of electricians' and household gloves, and transparent nipples and pacifiers. It is stated that Fred Wilson, general manager of the new company, has secured from a man prominent in the rubber business in Germany a process for making a perfectly clear and transparent rubber, which will be used in future products of the company. Mr. Wilson has had nearly 25 years' experience in the rubber business and for the past ten years has been superintendent and factory manager of the Canton Rubber Co. In the management of the factory he will be assisted by John C. Moore and George W. Kocher, both of whom have had wide experience in the manufacturing of dipped goods.

PERFECTION RUBBER COMPANY PLANS LARGE OUTPUT.

The Perfection Rubber Co., Cleveland, Ohio, notice of whose incorporation appears elsewhere in this issue, is installing machinery and equipment for an output of 4,000 gross toy balloons and 200 gross household gloves per month, and expects to add considerably to that capacity within a short time. L. J. Johnson, formerly with the Faultless Rubber Co. and the Miller Rubber Co., is head of the manufacturing department. A. D. Wismar, of Cleveland, will have charge of the business end, as secretary of the company. Messrs. Johnson and Wismar, together with S. Korach, B. W. Korach and H. J. Barham, of the S. Korach Co., of Cleveland, form the directorate of the Perfection company.

RUBBER COMPANY DIVIDENDS.

The Hood Rubber Co. paid a regular quarterly dividend of 1¾ per cent. on the preferred stock on August 1 to stockholders of record July 28.

The Lee Rubber & Tire Corporation has declared a regular quarterly dividend of 50 cents and an extra dividend of 25 cents, both payable September 1 to stockholders of record August 15.

The directors of the Ajax Rubber Co. have declared the usual quarterly dividend of $1.25 per share, payable September 15 to stockholders of record August 31.

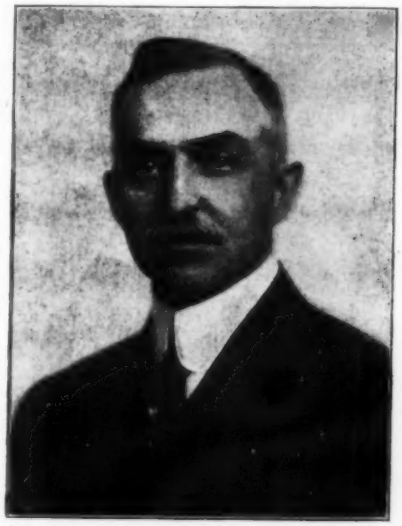
RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of shares of rubber manufacturing companies on August 25 are furnished by John Burnham & Co., 115 Broadway, New York City, and 41 South La Salle street, Chicago, Illinois:

	Bid.	Asked.
Ajax Rubber Co. (new)	63	66
Firestone Tire & Rubber Co., common	930	940
Firestone Tire & Rubber Co., preferred	112	114
The B. F. Goodrich Co., common	71½	72½
The B. F. Goodrich Co., preferred	113½	114½
Goodyear Tire & Rubber Co., common	235	239
Goodyear Tire & Rubber Co., preferred	106½	107½
Kelly-Springfield Tire Co., common	73¾	74¼
Kelly-Springfield Tire Co., 1st preferred	95	97
Kelly-Springfield Tire Co., 2nd preferred	..	..
Miller Rubber Co., common	220	226
Miller Rubber Co., preferred	105	106
Portage Rubber Co., common	130	135
Portage Rubber Co., preferred	130	135
Swinehart Tire & Rubber Co.	95	100
United States Rubber Co., common	56½	57¼
United States Rubber Co., preferred	111¾	112

JOSEPH P. DEVINE, INVENTOR AND EXPERT.

FIFTEEN or twenty years ago a French scientist and an American mechanical expert at Niagara Falls were conversing on the subject of the production, on a commercial scale, of carbide of calcium. The Frenchman finally said, "Sir, it cannot be done." The American said, "Come and see," and he took the scientist into an adjoining building and showed him eleven tons of this product. The astonished scientist could only say, "Oh! That makes a difference!"



JOSEPH P. DEVINE.

The American was Joseph P. Devine, whose name is well known in manufacturing circles, especially in rubber, in connection with the wide application of the vacuum dryer.

Mr. Devine was born in Philadelphia, January 4, 1867. His father, now 94 years of age, is still in perfect health. His mother, Sallie Paul, was a Quakeress, born in Philadelphia, and living her entire life in the house where she was born. The son was educated in the schools of his native city and lived there until about 20 years ago, when he moved to Buffalo. Previous to this, he had traveled extensively throughout Europe, and in one of his trips abroad began investigations on the use of the vacuum as applied to a wide range of materials. This resulted in the creation of a great plant for the manufacture of vacuum drying apparatus at Buffalo.

His special success lay in the application of vacuum drying, under reduced pressure, and by it he revolutionized many lines of industry. Of the products which have been made commercially possible through his studies, and carried out by the creation of special machines for the purpose, the list is a long one. It embraces the recovery of solvents; the application of oil heating to various chemical processes where exact regulation of temperatures is essential; the production of benzol, aniline oil, phenol, beta naphthol, trinitrotoluol, picric acid; all these are made commercially practicable or more economically produced through the study and inventive genius of the subject of this sketch.

It was Mr. Devine who installed the first vacuum dryers for crude rubber when every manufacturer in the United States firmly believed that air-dried rubber was the only good product. To-day practically all of the rubber is vacuum dried, and fabrics for rubberizing, as well. Mr. Devine has recently installed over 20 plants for the vulcanization of rubber boots and shoes under pressure, or in vacuo, which sounds the death knell of the old-time "dry heat" method. Mr. Devine was also one of the pioneers in the deresinating of gums and of low grade rubber, and his work in this line has been of great value to the rubber industry. To sum up for rubber, he has equipped establishments all over the world with dryers, impregnators, condensers, pressure vulcanizers, and apparatus designed by him and perfected in the works of the company of which he is the head.

Mr. Devine inherits the thorough-going traits of his Quaker ancestry and the wit and brilliancy of his Irish forbears. He is versatile, resourceful and of indomitable energy, popular with those in his business establishment and possessing the confidence of the hosts of manufacturers whose problems he has solved and whose business he has revolutionized.

PERSONAL MENTION.

F. H. Gerrans has been appointed manager of the London branch of A. Schrader's Son, Inc., Brooklyn, New York, W. H. Cole, formerly in charge, no longer being connected with the company.

Seneca G. Lewis, general manager of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, was married on July 3 to Mrs. Elizabeth McFall-McAfee in Sandusky, Ohio. Mr. Lewis and his bride are now settled in their home at Jack's Hill, Greensburg, Pennsylvania, the latter city being located about four miles from the company's plant at Jeannette.

Edwin N. Ohl was recently elected president of the New Castle Rubber Co., Pittsburgh, Pennsylvania, following upon the resignation of J. S. Wilson. W. H. Schoen and C. H. Bolton were made vice-presidents and E. H. Brainard, secretary. Mr. Ohl is also treasurer of the company.

E. M. Perdriau, managing director of the Perdriau Rubber Co., Limited, Sidney, Australia, was in New York City on business last month.

Frank G. Bolles, former manager of the export publication, "International Trade," Chicago, Illinois, has been chosen vice-president of the Russia Trade Corporation of America, a subsidiary corporation of R. Martens & Co., Inc. The former named company has opened an office in New York City and offices in several commercial centers in Russia, for the purpose of extending trade of American manufacturers in that country.

Harold R. Murdock has resigned his position as chief research chemist of the Rubber Regenerating Co., Naugatuck, Connecticut, to accept a position on the research staff of Charles Pfizer & Co., manufacturing chemists, Brooklyn, New York. Mr. Murdock has recently been granted several interesting patents on rubber reclamation.

G. H. Carnahan, formerly vice-president of the Intercontinental Rubber Co., with offices at 120 Broadway, New York City, has been elected president of the company.

T. K. Smetts, for two years representative of the service and advertising departments of the Firestone Tire & Rubber Co. at Des Moines, Iowa, has been transferred to the managership of the Spokane, Washington, branch of the company.

A. N. Rust, formerly salesman of the Minneapolis branch of The Fisk Rubber Co., Chicopee Falls, Massachusetts, has been made manager of the Fisk branch at St. Paul, Minnesota.

GOODRICH COMPANY APPOINTMENTS.

W. H. Sheehy has been appointed local manager of a new depot opened last month by The B. F. Goodrich Co., Akron, Ohio, at Estes Park, near Denver, Colorado.

John W. McCall has been succeeded as local manager at San Diego, California, by Warren F. Sanford.

C. L. Kelsey, Jr., formerly assistant manager at the Buffalo, New York, branch, has been appointed manager in charge at Cincinnati, Ohio, H. M. Spencer acting as assistant manager.

C. W. Simpson, formerly in charge at Cincinnati, will now devote his entire time to the district operating department and stock regulation department at Akron.

E. M. Lee, formerly assistant manager at the Cincinnati branch, has been given charge of the Denver, Colorado, depot.

ARTHUR JACKSON WILLS.

IT is gratifying to introduce to the readers of THE INDIA RUBBER WORLD, and to the rubber trade in general, men who are active in promoting efficiency in the manufacturing processes of the industry.

The career of Arthur Jackson Wills as an inventor of special machinery began with his connection, about ten years ago, with the B & R Rubber Co., North Brookfield, Massachusetts. Mr. Wills is a New Yorker and a graduate of the Stevens Institute of Technology, in mechanical engineering. His first invention of special rubber making machinery was an automatic jar ring cutting lathe.

ARTHUR JACKSON WILLS.

Supplementary to this machine, Mr. Wills invented a carton erecting and filling machine for counting and boxing jar rings.

Probably his most widely known invention is a trimmer for removing the overflow from the edges of rubber heels or similar molded articles. These machines are installed in large groups in some of the most important rubber factories in America and Europe.

His latest development is a machine designed to produce the plaited edging for bathing caps made from thin, pure rubber sheet or strip stock.

All of Mr. Wills' machines are most efficient and have been adopted by manufacturers of the lines to which they are adapted. He certainly is to be congratulated on the showing he has made as a designer of special rubber machinery, during the comparatively few years he has devoted to the needs of the rubber industry.

PEARCE-ARROW TIRE & RUBBER MANUFACTURING CO.

The Pearce-Arrow Tire & Rubber Manufacturing Co., Philadelphia, Pennsylvania, has purchased the assets and equipment of the Germantown Almegum Manufacturing Co., assigned, operating the plant leased under a purchase proposal, which has since been confirmed by the United States District Court.

The Pearce-Arrow company is making three grades of tires, a "Jit," "Standard" and "Puncture Proof,' and turns out about 400 tires per day. A new building is being planned, to care for increasing demand, and the company hopes to have equipment installed allowing for a daily output of 800 tires in time for 1918 business. H. H. Allyn, formerly with the Canadian Consolidated Rubber Co. and later with the Lee Tire & Rubber Co., is the superintendent.

RAPID PROGRESS OF THE NORWALK COMPANY.

The output of the Norwalk Tire & Rubber Co., Norwalk, Connecticut, has been more than doubled during the past year, and is now operating at full capacity day and night and turning out in the neighborhood of 2,000 tubes and 200 cases daily. Dr. David Spence, the well-known technologist, has been vice-president and general superintendent of the company since its inception in the spring of March, 1914.

TRADE NOTES.

Dr. H. R. McCurdy has been appointed receiver of the McClurg Tire & Rubber Co., of Coshocton, Ohio. A suit for $15,000 and inability of the company to market its product is given as the reason for the receivership. It is thought that this will be of short duration and that business will be resumed on the old basis, as there is said to be sufficient stock on hand to make this probable.

Important changes in the official force of the Perfection Tire & Rubber Co., Chicago, Illinois, resulted from a series of elections and appointments recently made. The officers and directors representing three companies which have been merged, including the Perfection Tire & Rubber Co., the Champion Automobile Co., and the Perfection Tire & Rubber Co. of Canada, Limited, will control all of the concerns. The present officers of the newly effected combination are C. R. Cole, president; R. J. Evans, vice-president; Charles W. Harris, secretary; E. A. Stickleman treasurer, and T. J. Mell, general manager. Mr. Mell was formerly assistant general manager of the Republic Rubber Co. Other executives who have been prominently identified with standard tire manufacturing companies are, Charles W. Harris, the secretary, formerly connected with the Kelly-Springfield Tire Co., and C. D. Whitston, the general sales manager, well known in connection with the old Diamond Rubber Co.

The American Auto Tire Co., 154 North Broad street, Philadelphia, Pennsylvania, has purchased the old Patterson Textile mills in Chester, Pennsylvania. The mills will be enlarged and converted into an automobile tire manufacturing plant. George G. Meeley is president, and Hugh B. Turner, secretary and treasurer. The Patterson mills are on a tract of six acres on Chester River and the line of the Philadelphia, Baltimore & Washington Railroad. The structures consist of the main building, of stone, 76 by 316 feet, three stories; a two-story brick building, 80 by 188 feet, a brick and frame building, 64 by 123 feet, a brick building, 33 by 74 feet; a brick boiler and engine house, and a two-story brick and stone office building.

The Braender Rubber & Tire Co., Rutherford, New Jersey, has moved its Philadelphia branch to 675 North Broad street.

At a recently held annual meeting of the shareholders of the Kansas City Tire & Rubber Co., Kansas City, Missouri, the following directors were elected for the ensuing year: P. E. Werner, Frank A. Werner, W. W. Wuchter, L. J. Smith, Harry Goodman, William R. Swissler and William Gould.

The Ohio Tire Service Co. has removed to 70 North Fourth street, Columbus, Ohio, where a greatly increased stock of Ohio tires and tubes will be carried. J. C. Henne, manager of the company, recently ordered five carloads of these tires for the Columbus store.

Suit was recently filed in the United States District Court to compel a number of alleged subscribers to the stock of the Dreadnaught Tire & Rubber Co., Baltimore, Maryland, to pay their subscriptions.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has opened a service, repair and selling agency at Bismarck, North Dakota. This business was formerly handled through the Fargo branch.

The McGraw Tire and Rubber Co., East Palestine, Ohio, is increasing its capital stock to $4,000,000; $2,000,000 of which will be common capital stock; and $2,000,000 of which will be 7 per cent cumulative preferred capital stock, redeemable at 110 and accrued dividends. $1,000,000 of the new preferred stock has been underwritten by The Maynard H. Murch Co., Cleveland, Ohio, and will be utilized to retire the present outstanding issue and to furnish additional working capital to care for increased business; the remaining $1,000,000 of preferred stock will be placed in the treasury to care for future growth and expansion.

TRADE NOTES.

At a recent meeting of the board of directors of the Victor Rubber Co., Springfield, Ohio, it was voted to increase the capital stock of the company from $300,000 to $750,000, and to declare a 100 per cent stock dividend on common stock, made possible by the last year's earnings.

The United States Rubber Co. takes advantage of conventions of retail shoe dealers to advertise its footwear by demonstrators. At the recent convention of the Illinois Shoe Dealers' Association, J. J. Hawkins showed practically the operation of making a rubber boot, giving a description of all the different processes, from the crude rubber to the finished product, and building up a boot upon a last while explaining the same in detail.

The three-story plant addition of the Anderson Rubber Works, Anderson, Indiana, which is nearing completion, will bring the total floor space of the company in actual use up to 50,000 square feet. The new addition, which is 86 by 60 feet, and adjoins the factory at 14th and Meridian streets, is being erected to care for the fast growing demand for the Miller vulcanizer, which is one of the company's important lines.

The Eagle Rubber Co., Ashland, Ohio, notice of whose incorporation appeared in the August issue of THE INDIA RUBBER WORLD, has purchased an acre of ground centrally located along the Erie right of way opposite the Erie station and will erect a brick building of about 150 feet in length and 60 feet in width, three stories, including basement. The company expects to materially increase its output of toy balloons and will also undertake the manufacture of various rubber sundries. H. R. Gill is president and treasurer, and H. V. Pohle, general manager.

The annual outing of the employes of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, was recently held at Idlewild and attended by more than 2,000 persons.

John W. Maguire, Chicago branch manager of the Republic Rubber Co., and chairman of the house committee of the Chicago Automobile Club, is trying a novel experiment with all automobile clubs in the United States and Canada, acting in coöperation with President W. O. Duntley, of the Chicago Automobile Club and the board of managers. Briefly, the plan is to extend the privileges of the club to all members showing credentials indicating good standing in their clubs. It is an exchange of courtesy which has resulted very satisfactorily in connection with ordinary social clubs.

The Hunter Dry Kiln Co., Indianapolis, Indiana, is building a drying laboratory adapted for the working out of drying problems. Any one having a drying proposition that they desire to have solved may refer it to the laboratory of the Hunter Dry Kiln Co. This process is as well adapted to the drying of compounds as it is to crude rubber.

The employes of the executive offices of the United States Rubber Co. in New York City have, on their own initiative, formed a company of infantry and are drilling twice a week at the armory of the Twelfth Infantry, N. G. N. Y., the use of this armory having been donated for the purpose. The services of a former officer of the National Guard have been secured as instructor. This is another example of the preparedness campaign now in progress.

The plant formerly operated by the Blodgett Rubber Co. at St. Joseph, Michigan, has been taken over by the recently organized Palmer Rubber Co. It is estimated that the new company will commence operation on September 1.

The Mattson Rubber Co., Lodi, New Jersey, has filed notice with the county clerk at Bergen indicating a change in the issuance and classifications of its capital stock, the purpose being to divide it into 100 shares preferred and an equal amount of common stock.

The Allen Machine Co., Erie, Pennsylvania, has increased its capital stock to $200,000 and is building an addition to its present plant which will enable the company to handle the heaviest class of work. This addition will be 60 by 180 feet with a 20-ton electrical crane serving the entire floor space.

The malleable iron foundry of the Link-Belt Co., Indianapolis, Indiana, is being enlarged by a one-story extension, 70 by 275 feet, with a wing 106 by 140 feet in dimensions. This addition will house the fifth melting furnace of the company and provide space for 60 molders.

In order to increase its factory facilities to allow for a future output of 500 automobile tires per day, the capital stock of the Vail Rubber Co., Chicago, Illinois, has been increased to $100,000, all of which has been paid in. At present the Vail company has a capacity of 265 tires but is only making 200 per day. The officers of this company are as follows: Adolph C. Ehman, president and treasurer; W. A. Vail, vice-president, and Francis Lackner, secretary.

The Board of Trade of Girard, Ohio, have in contemplation the establishment of a plant for the manufacture of rubber specialties. According to plans discussed the proposed company will be capitalized for $200,000.

The Hamilton Rubber Co., Trenton, New Jersey, has opened offices at Atlanta, Georgia, which will be the headquarters for the States of Georgia, Atlanta, South Carolina and Florida. H. B. Schesinger will manage the southern branch and will be assisted by F. L. Martinez. This company makes tires, tubes and mechanical goods.

A. B. McVay has resigned as secretary of the Bucyrus Rubber Co., Bucyrus, Ohio, and has been succeeded by G. P. Mader.

Interesting statistics concerning the United States Rubber Co. and subsidiaries show that the company owns plantation property in Sumatra covering 90,000 acres representing an investment of nearly $9,000,000. In its 47 factories the company employs 35,000 people and its yearly production fills 15,000 freight cars, a train 112 miles long. It is said to consume in the manufacture of its various products more than 55,000,000 yards of cotton fabric yearly.

The Iowa Rubber Co. has been recently organized and expects to locate at Davenport or Bettendorf, Iowa. This section of Iowa is said to be an eligible location, both from a labor and distribution viewpoint. Chief among those interested are: J. W. Bettendorf, J. R. Lane and Judge J. W. Bollinger.

The Republic Rubber Co., Youngstown, Ohio, is working double shift in every department. The company has made shipments to 22 foreign countries this year.

Creditors of the New York Commercial Co., 290 Broadway, New York City, have received a final dividend of 1⅝ per cent, making a total dividend of 39⅝ per cent. The company went into bankruptcy on April 12, 1913, with liabilities of nearly $6,000,000.

The Standard Woven Fabric Co., Walpole, Massachusetts, has sold its Framingham factory. This company recently acquired the old plant of the Walpole Rubber Co., and is making a variety of rubber specialties.

The death of P. Carter Bell, of the Carter Bell Manufacturing Co., New York City, manufacturer of rubber substitutes, will in no way interfere with the business of the company. All of Mr. Bell's formulæ will be continued in use and no interruption will be caused by his demise.

Gustave Kush, well-known manufacturer of printers' blankets, 3 Park Row, New York City, has succeeded in developing a certain type of specially cured tubing in active request in hospitals and laboratories. As this tubing was formerly an exclusively European product, Mr. Kush's invention will materially promote the convenience of consumers in this country.

NEW INCORPORATIONS.

American Banana Products Co., August 7 (Delaware), $1,000,000. Henry T. Farrow, Norman P. Coffin, Wilmington, Delaware, and Clement M. Egner, Elkton, Maryland. Principal office, Corporation Trust Co. of America, 394 duPont Building, Wilmington, Delaware. To acquire plantations for the cultivation of bananas, rubber, etc.

American Puncture Seal Co., Inc., August 7 (New York), $1,000. William E. Hendry and Hulda G. Hendry, 1461 St. Peters avenue, and Alice M. Waters, 2466 Frisby avenue—all of New York City. To manufacture puncture healing liquid.

Anderson Tire Manufacturing Co., July 22 (Delaware), $100,000. James C. Anderson, William W. Anderson, George A. Rock—all of Washington, D. C. To manufacture tires, etc.

Beacon Tire Co., Inc., July 31 (New York), $100,000. Edward C. Griffith and K. G. Johnston, 1625 Broadway, New York City, and H. A. Demarest, Los Angeles, California. To manufacture auto and motor tires, etc.

Bradshaw Tire & Rubber Co., Inc., June 24 (Illinois), $10,000. C. E. Bradshaw, William M. Gentleman, Jr., and George S. Atwater. Principal office, 1337 S. Michigan avenue, Chicago.

Carnegie Tire & Rubber Co., Inc., August 23 (New York), $25,000. Roland J. Reynolds; Victor W. Fink, and William H. Dodd—all of 69 Wall street, New York City.

Central & South American Chicle Co., The, July 7 (Delaware), $2,000,000. José P. Cuellar, Caracas, Venezuela; B. L. Atwater, Garden City, New York; Julian A. Arroyo and Miguel Gonzalez Rincones, New York City; C. L. Rimlinger, Herbert E. Latter and Norman P. Coffin, Wilmington, Delaware. Principal office, Corporation Trust Co. of America, 394 duPont Building, Wilmington, Delaware. To manufacture and deal in raw chicle or any other kind of chicle or gum.

Col. Brown Tire Co., July 24 (California), $500,000. Henry D. Boddington, C. H. Braden, A. D. Denison, James Edmunds, Bert C. Smith—all of Los Angeles—and Mattison B. Jones and O. A. Lane—both of Glendale, Los Angeles County, California. Principal office, Los Angeles, California.

Cut Price Auto Tire Co., July 27 (New Jersey), $100,000. Herman Fineberg, Isaac Fineberg and John L. Heher—all of Trenton, New Jersey. Principal office, 12 East Hanover street, Trenton, New Jersey. To deal in tire and automobile accessories, etc.

Eckrode Rubber Co., C. E., Inc., August 2 (New York), $50,000. C. E. Eckrode and Otto Wuest—both of Highland Park, and Andrew Perkins, 17 Water street—both in New Brunswick, New Jersey. To manufacture rubber goods and novelties.

Falcon Chicle & Lumber Exploitation Corporation, August 24 (New York), $100,000. Francisco Garcia, John O. Perez and Alexander Lamont—all of 68 William street, New York City. To produce chicle, etc.

Federal Tire & Repair Co., The, June 26 (Tennessee), $3,000. L. A. Wallace, B. J. Hughes and Will R. Manier, Jr.—all of Nashville, Tennessee. Principal office, Eleventh avenue and Broad street, Nashville, Tennessee.

Fibre Rubber Manufacturing Co., Inc., July 20 (Delaware), $500,000. A. J. Sherman, Ferris Giles, L. S. Dorsey—all of Wilmington, Delaware. Principal office, Colonial Charter Co., 927 Market street, Wilmington, Delaware. To acquire letters patent for the manufacture of rubber goods of all kinds.

G. A. Aeronautic Co., Inc., The, August 4 (New York), $105,000. Charles H. Bassford, 38 North 12th street, Newark, New Jersey: Samuel W. Mower, 66 West 85th street, and Joseph E. Rogers, 203 West 108th street—both in New York City.

Goodyear Tire Co., The, January 4 (Minnesota), $300,000. Harry A. Trenholm, Minneapolis; Gust W. Franson and Charles W. Oberg, Deerwood—both in Minnesota. Principal office, Minneapolis, Minnesota. To manufacture auto tires and automobile accessories and supplies.

Hipwood International Pneumatic Crutch Co., Inc., August 8 (New York), $250,000. George Hipwood, Hotel McAlpin, New York City; John W. Barrett, 62 Temple street, Somerville, Massachusetts, and Carmac F. Egan, 382 East 168th street, New York City.

Indian Tire & Rubber Co., July 19 (New Jersey), $100,000. Elmer W. Van Ness, Mountain View; Adelbert Hauschild, 29 Morris street, New Brunswick, and Willard P. Fraley, 127 Benner street, Highland Park—all in New Jersey. Principal office, 320-6 Commercial avenue, New Brunswick, New Jersey. To manufacture and deal in all kinds of rubber goods.

J. T. Johnstone & Co., Inc., August 19 (New York), $200,000. Albert F. Jaeckel, Adele M. Ferre, 32 Liberty street, and Douglas Haldane, 22 William street—both in New York City. To manufacture rubber goods, operate rubber plantations, etc.

Kelsey Wheel Co., Inc., August 23 (New York), $13,000,000. Elmer F. Holmes, 37 Wall street; Allen E. Moore, 20 Arden street—both in New York City, and Donald Havens, 55 Hanson Place, Brooklyn, New York. To manufacture wheels, rims, auto parts, etc.

Maple Leaf Tires, Ltd., June 3 (Canada), $500,000. Rupert K. Grimshaw, Edward J. Swift and Harry C. Long. To manufacture automobile tires, tubes, truck tires, belting and all rubber sundries.

McNaull Tire Corporation, August 4 (New York), $500,000. Edward H. Power, 108 West 57th street; Farron S. Betts, 410 Riverside Drive—both of New York City, and Joseph W. Murphy, 189 Eighth avenue, Brooklyn, New York. To manufacture tires and rubber goods.

Mee-Tu Tire & Rubber Co., July 31 (Pennsylvania), $5,000. Thomas G. Meeley, George G. Meeley, 5,000 Pine street; Lester U. Weaver, 5447 Lansdowne avenue—all of Philadelphia, Pennsylvania. Principal office, Chester, Pennsylvania. To manufacture and deal in automobile tires, tubes, accessories, junk, etc.

Muller Tire & Rubber Co., July 7 (Oklahoma), $15,000. Alfred Muller, San Antonio, Texas; A. L. West and R. J. Uehlinger, Tulsa, Oklahoma. Principal office, Tulsa, Oklahoma. To buy and sell all parts and appliances used in connection with motor vehicles, etc.

Nashua Rubber Co. of Nashua, August 4 (New Hampshire), $5,000. Fred A. Jewell, Lawrence; George I. Crocker, Fitchburg—both in Massachusetts; Guy W. Swallow, Nashua, New Hampshire. Principal office, Nashua, New Hampshire. To manufacture and deal in rubber goods, etc.

Newark Auto Supply Co., June 30 (New Jersey), $25,000. Nathan J. Berkowitz, Newark; Abraham G. Weinberg, Harrison; Samuel G. Salls, Plainfield, and Harry Roth, Irvington—all in New Jersey. Principal office, 304 West Front street, Plainfield, New Jersey. To deal in automobile accessories, etc.

New Tread Tire Co., The, June 17 (Kentucky), $5,000. David H. Smith, T. W. Price, A. L. Smith. Principal office, Louisville, Kentucky. To deal in automobile accessories, etc.

North American Rubber Co., July 24 (New Jersey), $250,000. S. S. Adams, Jr., H. M. Kennedy and M. B. F. Hawkins—all of Wilmington, Delaware. Principal office, 143 East State street, Room 210, Trenton, New Jersey. To manufacture and sell the Mercer Non-Blowout Inner Tube, to make rubber covered poles and to go into the rubber business in general.

Pennsylvania Rubber Co., Inc., August 21 (New York), $6,000,000. Seneca G. Lewis and H. W. Dupuy, Jeannette, Pennsylvania, and G. A. McLaughlin, 61 Broadway, New York City. To manufacture tires and rubber goods.

Perfection Rubber Co., The, July 7 (Ohio), $40,000. L. J. Johnson, A. D. Wismar, S. Korach, B. W. Korach and H. J. Barham. Principal office, 2097-2107 Columbus Road, S. W., Cleveland, Ohio. To manufacture and deal in dipped goods, druggists' sundries and rubber specialties.

Post Tire & Rubber Corporation, August 1 (Delaware), $1,500,000. William F. O'Keefe, George G. Steigler and E. E. Wright—all of Wilmington, Delaware. Principal office, Corporation Co. of Delaware, Equitable Building, Wilmington, Delaware. To manufacture and deal in automobile tires, tubes, casings, etc.

Rubber-Aid Co., The, August 9 (Ohio), $10,000. David Rubin, Max Schwab, Sam Rubel, Abe Effron, and Abe Isralsky—all of Cincinnati, Ohio. To manufacture surgical goods.

Rubber Co. of America, July 7 (New Jersey), $25,000. Judson G. Campbell, Rutherford; Julius Greenfield, West Newark—both in New Jersey, and Charles Heimlich, 362 Bleecker street, New York City. Principal office, Broadway, corner St. Louis avenue, West Newark, New Jersey. To manufacture and deal in rubber goods, etc.

Quabaug Rubber Co., August 3 (Massachusetts), $125,000. Thomas G. Richards, North Brookfield; Frank C. Smith, Jr., and J. Otis Sibley, Worcester—both in Massachusetts. Principal office, North Brookfield, Massachusetts. To manufacture rubber heels, soles and all other rubber goods and goods made of rubber compounds or other substance, etc.

Shaw Tire Co., July 10 (Massachusetts), $300,000. A. B. Shaw, 23 Bowers street, Medford; Edgar E. Fay, 34 Beacon street, Newton, and William V. Burton, 7 Irving street, West Medford—all in Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in tires, tubes, etc.

Stungo Radium Rubber Co., August 10 (Delaware), $1,000,000. Harry T. Farrow, M. V. Haywood—both of Wilmington, Delaware, and Clement M. Egner, Elkton, Maryland. Principal office, Corporation Trust Co. of America, 394 duPont Building, Wilmington, Delaware. To manufacture and deal in chemicals, rubber and any goods of which rubber is a part.

Superior Tire & Rubber Co., July 18 (Maine), $500,000. E. M. Leavitt (president), Winthrop, and Ernest L. McLean, Augusta—both in Maine. Principal office, 242 Water street, Augusta, Maine. To manufacture and deal in tires.

S. & W. Rubber Manufacturing Corporation, The, August 16 (New York), $10,000. Arthur C. Squires (president); Thomas J. Smith, 637 10th street; John Wainwright and Edward Jockers, 13th street—all in College Point, Long Island. Principal office, 19th street and Sixth avenue, College Point, Long Island. To manufacture inner tubes, rubber heels, dental rubber, etc.

United Securities, August 5 (Maine), $50,000. Fred F. Phillips (president and treasurer) and George H. Hinckley (clerk)—both of Portland, Maine. To manufacture rubber, etc.

Wilson Rubber Co., The, July 18 (Ohio), $40,000. Fred Wilson, John S. Willis and Wendell Herbruck. Principal office, 1320 Fifth street, N. E., Canton, Ohio. To manufacture dipped rubber goods.

PROGRESS OF THE McFALL RUBBER COMPANY.

The McFall Rubber & Manufacturing Co., Kansas City, Missouri, which began manufacturing tire accessories, blowout patches, reliners, fan belts, etc., in March, last, is now working full blast, with 60 employes. A complete line of tire accessories is being made and the company expects to manufacture inner tubes next season. A. J. Stephens, who has been in the tire jobbing business for the past six years, as owner of the Stephens Motor Tire Co., of Kansas City, is general manager of the McFall company. L. E. McFall is superintendent. Mr. McFall formerly held a similar position with the Western Tire & Rubber Co., of Kansas City, and has been in the manufacturing business for the past seven years.

FEDERAL RUBBER CO.'S OUTING.

The office force and factory heads of the Federal Rubber Co., Cudahy, Wisconsin, held an outing at Keipper's Park one day last month, and the camera proves that they thoroughly enjoyed themselves on that occasion. An interesting program of athletic sports was successfully carried through. A leading feature of the day was a ball game between the office force and the factory representatives, which was won by the latter. The penalty to be paid by the losers of the game is a banquet for both nines, to be held later. The outing was concluded by a banquet in the evening.

FEDERAL RUBBER COMPANY OUTING AT KEIPPER'S PARK.

FRENCH ARMY FOOTWEAR.

The Canadian Consolidated Rubber Co., Limited, Montreal, Canada, has contributed many men to the Dominion troops which have gone to the front in the great European war. The business and the mechanical departments are represented in both rank and file, and much valor has been shown in regimental and individual cases.

This company has furnished the British government many thousand pairs of trench boots, showing wonderful despatch in filling orders for this necessary footwear. On this page is shown a company of Canadian infantry "somewhere in France," each man wearing a pair of the trench boots, made in Canada.

THE OBITUARY RECORD.

PROMINENT IN RUBBER CHEMISTRY.

PERCY CARTER BELL, president of the Carter Bell Manufacturing Co., New York City, died at his residence at East Orange, New Jersey, August 23, aged 49 years. Mr. Bell was born at Manchester, England, August 28, 1867. He was the son of J. Carter Bell, an eminent chemist, and chose his father's profession, graduating with honors from Victoria University. Choosing the manufacture of rubber for a special field he secured employment with prominent concerns in that line in England. He came to America about 25 years ago, and after a year in the chemical department of the New York Belting & Packing Co., he opened a technical laboratory in New York City in 1893, devoting himself as analytical and consulting chemist for the rubber trade.

PERCY CARTER BELL.

In 1894 he formed a partnership with Curtis P. Smith to manufacture chemically pure chloride of sulphur, and also a rubber substitute of his invention. This concern was incorporated three years later as the P. Carter Bell Co. and in 1903 the present concern, the Carter Bell Manufacturing Co., was incorporated.

Mr. Bell some years ago contributed to the columns of THE INDIA RUBBER WORLD, his articles on the effect of various chemicals and materials on caoutchouc being specially instructive. He was a most companionable man and had a host of friends in the rubber and chemical industries.

Mr. Bell was prominent in the Masonic fraternity, being a past master of the lodge at East Orange. He leaves a widow.

QUEBEC'S RUBBER SCRAP EXPORTS AND GOODS IMPORTS.

According to the Annual Report for 1915 by the American Consul at Quebec, Canada, $122,356 of rubber scrap was exported to the United States, as against $117,017 in 1914; showing an increase of $5,339.

During 1915 the Province of Quebec imported $27,623 of manufactures of rubber and gutta percha, of which $17,667 was from the United States. The previous year these imports amounted to $32,348, of which $11,448 was from the United States; showing that, while the total imports of rubber and gutta percha goods increased by $4,725, the imports of the same merchandise from the United States decreased to the extent of $6,219.

The crude rubber sausage has always held its place in the world of raw rubber, but the rubber sausage as a more or less dainty edible is an innovation, again reflecting German ingenuity. Word comes from Berlin to the effect that a certain Hamburg merchant has been fined 2,000 marks for a unique violation of the pure food laws. The offense committed by this enterprising purveyor of delicatessen consisted in the selling of a commodity purporting to be liver sausage for 2 marks and 20 pfennigs a pound, which proved on analysis to contain macerated rubber, finely ground hair and gelatine. It was absolutely guiltless of liver, other flesh or fats.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

TRUE sportmanship is shown by The B. F. Goodrich Co. in the conditions governing its award of the hammered silver trophy cup shown in the accompanying illustration. Although the Goodrich company is a maker of bicycle tires, among which is the famous Palmer tire used by many racers, it is expressly stated that riders contesting for this trophy may use any make of tire they wish. The bicycle club team scoring the highest number of points in open road competition during 1916 will win the cup. It is valued at over $400, and, as will be seen, is of graceful, chaste design, with clear-cut explanatory lettering under the space left for the winner's name. Bicyclists and cycle fans are all anxious to see this unusually handsome trophy, and the company is therefore sending it on tour to the larger cities, while in other cities full size reproductions are being displayed as hangers. In order to have the points count, all races must be sanctioned by the National Cycling Association and conducted under its rules.

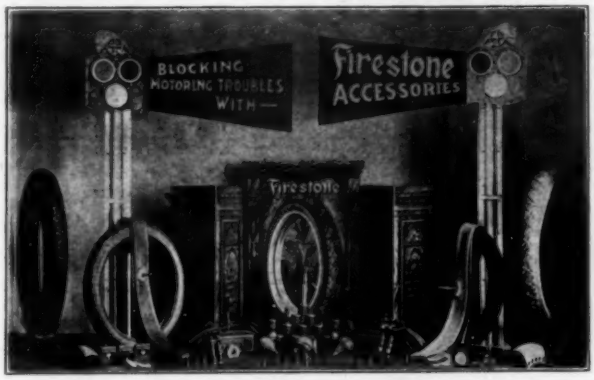
The Goodrich company is also making things interesting in the driving competitions for 1916, by announcing $10,000 in awards to racing champions during the year, the rules governing the competition to be determined by the American Automobile Association, based on the length of each contest, the field of starters and the character of the race. Although the Goodrich Silvertown cord tire is deservedly popular in speed contests, no stipulation is made as to the make of tire to be used by the contestants. The money will be awarded as follows: $5,000 for the champion; $3,000 for second in number of points, and $2,000 for third.

On Goodrich outing day, held during the past month, $15,000 was distributed to employes, each employe being given one dollar to spend as he desired. Many of them attended the great Akron factory picnic at Cedar Point, arranged by the Whitman-Barnes relief association and the Brotherhood of Railway Trainmen.

C. O. Littlefield, who has been in the employ of the Goodrich company less than two years, has recently been promoted to a responsible position in the Trade Record department at the Akron office.

The Goodrich Athletic Association has sent a challenge to the Goodyear and Firestone athletic associations for a triangular track and field meet on the new Goodrich athletic field in October. The field will be opened on Labor Day by the employes of the Goodrich company by a big field and track meet for which 300 entries have been received from the Goodrich forces. The athletic contest between the three rival tire companies of Akron will take place in October.

The Firestone Tire & Rubber Co. is conducting an extensive plan of window displays in all its branch agencies. Appreciating the value of attractive exhibits, E. S. Babcox, manager of the advertising department, has had made various cut-outs, show cards, etc., for such use, and these are arranged in a window at the factory and photographed. Then these various accessories are shipped to the agencies, together with the photograph, by which means the display can be duplicated in all the principal cities. The illustration shown is one of these displays.



A folded cardboard background is handsomely lithographed in colors, while the signal posts are cut out and arranged to stand upright in the window, the rest of the display being taken from the stock of goods in the store. Another has a large picture of a cyclist and a motorcyclist being photographed by a "movie" camera man, whose cut-out, electrically-propelled arm, turning the crank, is an eye-catcher. This campaign has now gained such prominence, that the agency windows in various cities are regularly observed by many for the changes.

On August 26 the foremen, superintendents and officials of the Firestone company, to the number of 225, held their annual outing. Early in the morning 50 automobiles carried them to the large farm of Amos C. Miller, vice-president of the company, at Castalia, where a sumptuous midday dinner was heartily enjoyed. The early afternoon was spent in ball games, quoits, etc., after which the entire party journeyed to Cedar Point, Sandusky, where they were the guests of President Firestone. Bathing in Lake Erie was followed by supper at the Hotel Breakers and the following morning, after breakfast at the hotel, they returned to Akron.

Harvey S. Firestone, Thomas Edison, Henry Ford and John Burroughs, the naturalist, are "roughing it" together in the Adirondacks.

* * *

Mention has been made of the remarkable department in the factory of the Goodyear Tire & Rubber Co. composed entirely of deaf mutes, whose affliction only serves to heighten their efficiency in factory work. For some time a fraternity has existed among this band of workers, and a club has now been formed to promote good fellowship among them. The Goodyear officials coöperate in every way to conserve the safety and add to the pleasure of this department, and many of the deaf mutes are very good athletes, contending for Goodyear honors on the football, baseball and basketball teams.

The name of the safety department of the Goodyear company has been changed to that of "police department," with P. J. Hutchison as police chief. Goodyear police patrol the factory and have authority to stop all dangerous work, and censure or discharge careless workmen.

A "Suggestion System," in use by the Goodyear company, encourages employes to offer ideas for improving machinery, methods, conditions and product in the factory, hundreds of dollars being paid annually to the employes for suggestions accepted by the company.

Shelby A. Falor, manager of the motorcycle tire department of the Goodyear company, has been elected president of the Federation of American Motorcylists.

* * *

The General Tire & Rubber Co. has applied for an increase of capital from $200,000 to $500,000, to care for the growing demands of its business. A 60 by 200-foot addition is soon to be erected, which will be used for an additional tire building room.

M. O'Neil, president of the The General Tire & Rubber Co., has leased to F. A. Seiberling, president of the Goodyear company, the eight-story Ohio Building and a large plot of land adjoining. This office bulding has been completed less than a year and contains the quarters of The Akron City Club, a new organization of Akron business men, the club occupying the three upper stories of the building.

* * *

The Portage Rubber Co. has just completed a three-story building, 60 by 80 feet in dimensions, that is being used for manufacturing automobile tires, and has begun the erection of a two-story building, 50 by 150 feet, the lower floor of which will be used for a shipping room and the upper floor as a stock room for tires and tubes. All the buildings of this company are of structural steel construction surrounded with concrete and brick.

The $250,000 worth of new preferred stock of the company, mentioned last month, has all been taken by the stockholders at 105 per share and paid for on August 1.

* * *

A two-story building of the Miller Rubber Co., in which chemicals were stored, was recently burned to the ground.

* * *

P. H. Goodall has been made assistant sales manager of the Mohawk Tire & Rubber Co. Mr. Goodall was formerly branch manager in Cleveland for the United States Tire Co.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

THE vacation season is about over. Many of the mills shut down during the excessively hot spells of the past month and took this opportunity for making such alterations and improvements as will put them in proper shape for the large amount of business which they have on hand for the coming season. Most lines of the rubber business are in pretty good condition, with enough orders on their books or business in prospect to keep them going well along into the season, and the outlook for orders during the early fall is most encouraging. There is a diversity of opinion as regards the tire business, some producers reporting orders ahead of production, and others admitting that they could do more business than they have on hand. In rubber boots and shoes, the manufacturers have had a busy season and have not caught up, so the summer shutdowns have been shorter than in some former years. It is evident that retail stocks in rubber footwear were practically sold out last winter and, as a consequence, large orders were taken by every producer—in fact, the capacity of every factory has been strained in order to be able to deliver the early fall orders. Mechanicals have felt the effect of the spring and early summer weather as regards the garden hose business, and it is evident that a considerable amount of last year's goods are still in retail stocks. The demand for rubber belting in part makes up for the loss of the hose trade, the

present position of the leather belting industry being such that the demand for rubber belting has very largely increased. Druggists' sundries manufacturers report a good seasonable business.

* * *

The Hood Rubber Co. will remove its Boston office from Bedford street, where it has been ever since it started in business, to the new 11-story building at the junction of Summer and High streets, which is now nearing completion. The Hood company will occupy a portion of the eighth floor, which is now being fitted up for a sales room and sample room. The accounting, business and executive offices will remain at the factory in East Watertown. The Boston headquarters will be presided over by W. W. Richardson, who for some years has welcomed all visitors to the factory and guided them to the several departments. With him will be Proctor Caldwell, city salesman for the Hood Tire Co., Inc.

This new building, which is one of the most noticeable in the vicinity of the South Terminal Station, stands upon historic ground. For years Daniel Webster made his home in the granite residence which had to give way to the onward course of business. He was living there when he took part in the historical India Rubber case. The new building represents a monument to the indomitable energy of William B. Rice, who began life as a shoemaker and who, before his death, had made his name and his shoes known in five continents, and who, for several years, placed upon the market a line of rubber footwear branded with the name of Rice & Hutchins.

* * *

The 700 men and women employed by the Revere Rubber Co. who went on a strike about the first of June are now back at work, the company having agreed to raise wages $1 per week, to make the working week for men 54 hours and for women 53 hours, and to settle departmental grievances by conferences with shop committees.

* * *

Mention was made in THE INDIA RUBBER WORLD of the formation of the Rubber Heel Club of America for the purpose of securing closer relations between manufacturers and jobbers; correcting trade abuses; educating the general public in the use of rubber heels, and improving conditions relating to the rubber heel industry. Since that time the organization has been perfected at a meeting held in this city, resulting in the election of the following officers: Robert H. Cory, O'Sullivan Rubber Co., president; George A. Stetson, Elastic Tip Co., secretary and treasurer, whose office is at 370 Atlantic avenue, Boston. Mr. Cory is also on the board of directors, of which the other members are C. H. Oakley, Essex Rubber Co., and Charles Measure, Federal Rubber Co. The present membership includes the following firms:

Elastic Tip Co., Boston, Massachusetts.
Essex Rubber Co., Trenton, New Jersey.
Federal Rubber Co., Cudahy, Wisconsin.
Foster Rubber Co., Boston, Massachusetts.
Goodyear Tire & Rubber Co., Akron, Ohio.
O'Sullivan Rubber Co., New York City.
Panther Rubber Manufacturing Co., Stoughton, Massachusetts.
Plymouth Rubber Co., Canton, Massachusetts.
Revere Rubber Co., New York City.

* * *

Mention was made in THE INDIA RUBBER WORLD last month that the business of the B & R Rubber Co. had been purchased by Thomas G. Richards. Since that time a Massachusetts corporation has been organized, with a capital stock of $125,000, under the name of the Quabaug Rubber Co., which has purchased from Mr. Richards all the assets and business of the B & R Rubber Co. Mr. Richards is president and treasurer of the new company, and the board of directors consists of Mr. Richards, of North Brookfield; J. Otis Sibley and Frank C. Smith, Jr., of Worcester. There has been no interruption of the work since the B & R company went into the hands of the receiver and the plant is now running to nearly full capacity in the same lines of goods which were manufactured by the old company, prominent among which are tubings, baby carriage tires, mats and the Armortred and Barco soles, the former for shoe repairers and the latter for shoe manufacturers.

* * *

Several hundred employes of The B. F. Goodrich Co. from all over New England participated in the annual outing held at Riverside recreation grounds on August 8. It was one of the hottest days of the season, but the water in the Charles River was found to be most comfortable for bathing purposes and there was no lack of canoeing up and down the river. There were a variety of field and river contests, the latter including a 20-yard dash under water and a diving contest, and some of these events afforded great amusement for the onlookers. A prize was given the handsomest baby attending the outing. The committee having charge of the outing is to be congratulated on the perfect success of the whole affair. This committee consisted of Fred T. Moore, the New England manager; W. H. Moore, F. W. Tucker and C. F. Conner. The committee on sports was "Tom" Donnellan, E. S. Clark and H. J. Slaman.

* * *

The second annual field day of the employes of the Boston Woven Hose & Rubber Co. was held at Riverside recreation grounds on July 29, more than 1,000 persons attending. Special trains carried the party to and from the grounds. There were track and field events and a baseball game. A band concert and dancing were also features of the occasion. The tennis team of this company was defeated 4–3 by one from the Edison Illuminating Co., which carried off the prize, a handsome loving cup. The outing was under the auspices of the Mutual Benefit Association of the company and the arrangements were in charge of a committee of which James H. O'Brien was chairman.

* * *

The clothing factory of the American Rubber Co. at Stoughton, formerly the Stoughton Rubber Co., is now adding a story to one of its big wooden buildings, the object of which is to still further systematize the progress of materials, from the arrival of the raw materials of the factory to the finished product ready for shipment.

* * *

Guy D. Niles has been appointed manager of the Boston branch of the Portage Rubber Co. at 683 Boylston street, succeeding Judson C. Eubank. I am informed that the company has taken a ten-year lease on a new building that is being erected for its use at 700 Beacon street, but does not expect to be able to move from the present location for some months.

* * *

Charles A. Coe, Eastern selling agent of the United States Rubber Co., who has been ill at his residence at Essex Junction for a protracted period, has sufficiently recovered to be at his office in this city a portion of the week. He has hosts of friends in the trade who will be glad to hear of his recovery.

* * *

E. T. Foote, formerly of the New York office of The Cutler-Hammer Manufacturing Co., whose clutch brakes and calender controllers are used in many rubber mills, has re-

cently been put in charge of the Boston office of that company, located in the Columbian Life Building at 77 Franklin street. Mr. Foote's experience in the engineering department at the Milwaukee factory, and in sales engineering work in New York, fits him admirably for his new position.

* * *

Merton A. Turner, sales manager of the Monatiquot Rubber Works Co., South Braintree, has just returned from a most enjoyable cruise along the Maine coast in the good yacht "Hypatia." The company is laying another line of machines to take care of the increased demand for its "naturized" rubber, and is building a garage to accommodate 12 or 15 cars.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

ANENT the filing of a certificate at Wilmington, Delaware, the other day, increasing the capital stock of the Globe Rubber Tire Manufacturing Co., there is unfolded a story of a marked growth in the demand for Globe tires. The stock is increased from $400,000 to $1,500,000 for the sole purpose of increasing the tire output of the company. The personnel of the concern will remain the same as at present.

It is the intention of the company to double their present capacity. Building operations may be begun late in the coming fall. In spite of the fact that not long ago the capacity of the plant was materially increased, it has been a physical impossibility to keep up with orders. Both the United and the Globe plants of the companies are now working to capacity. The new plant will be erected adjacent to the present structures.

E. S. Goodloe has been added to the staff of representatives of the United and Globe companies. He will look after the mechanical rubber goods line, with headquarters at Washington, D. C. His territory will extend as far south as Atlanta, Georgia.

* * *

It was expected that the recently organized Rubber Manufacturers' Association would be located in permanent quarters by this time, but a location has not as yet been decided upon. John A. Lambert, of the Acme Rubber Manufacturing Co., president of the association, has left Trenton on a vacation of one month. After his return, action on permanent quarters may be taken.

* * *

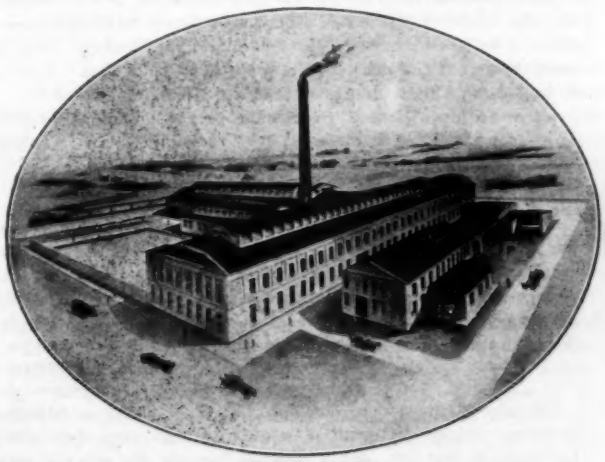
Because of a heavy increase in its business the Essex Rubber Co. has found it necessary to increase its capital stock $325,000 over and above its present capitalization of $125,000 common stock, and $50,000 preferred stock. A recently completed addition enables the company to take care of the growing business for the present, but it has been necessary to double the office room.

* * *

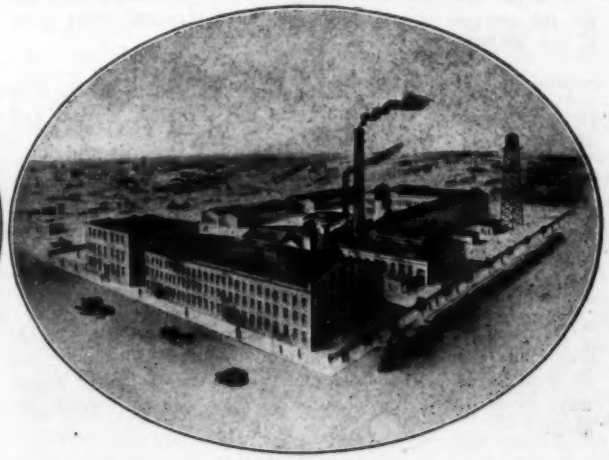
Contracts for a $20,000 addition to the plant of the Luzerne Rubber Co. have been given out. This concern, which confines its operations to hard rubber specialties, has been uniformly successful since starting in business. It has been necessary each year since its organization to add somewhat to the capacity of the plant.

* * *

The North American Rubber Co., Inc., hopes to begin the manufacturing of fabric-lined tubes for automobiles next month in its newly leased quarters. Unprecedented claims are made for this tube and it is said that practical road tests have proven that it will do all that is claimed for it. By a patented process the company is enabled to line the tube with a fabric having an exceptionally high percentage of elasticity. The lining fabric is guaranteed not to crease or buckle in a tube which is only partly inflated. One of the tests to which the tube was subjected was carried out by placing it in a shoe picked from a junk heap. After the worn out shoe had been further mutilated by having a number of holes cut into it sufficiently large to cause the tube to touch the ground through the tread, it was placed on a car weighing 2,800 pounds and four men entered the car. The car was driven at the rate of 45 miles an hour for nine miles without any sign of a blow-out. There were other tests equally severe. The tube is to be marketed under the name of the "Mercer."



UNITED PLANT.



GLOBE PLANT.

PLANTS OF THE UNITED & GLOBE RUBBER MANUFACTURING COS., TRENTON, NEW JERSEY.

In addition to making the tubes, the North American company will market a patented hard rubber composition for coating mandrel poles. It is claimed by the company that a mandrel covered with this composition permits the thorough and uniform curing of a tube with no possibility of burns or uneven curing, as may be the case where the metal pole touches the rubber. Mandrel poles of all descriptions can be treated with the composition and then returned to the sender for use. Another advantage claimed for the composition-covered mandrel is that it strips clean.

* * *

Representatives of the Kelly-Springfield Tire Co. have looked over factory sites in and around Trenton with a view to possibly

locating one of their plants here. Several sites have been considered and the Trenton Water Commissioner was visited by the representatives to learn whether sufficient water would be piped to certain sites in the event of their selection. They were assured that the required water would be furnished. There is no positive assurance that the company will decide to open a Trenton plant.

* * *

The Globe Tire Co. is encouraging its men in the field of athletics. A large ball park on the company's land adjoining the mill has been fenced in and bleachers erected. A grand stand is contemplated and next season the outfield is to be improved and sodded. Nearly all the rubber mills have been represented on the diamond this year, but the Globe boys have the most pretentious grounds. It is said the heads of the rubber concerns find that it pays in dollars and cents to encourage their men in activities of this sort and that there has been a corresponding falling off in saloon patronage.

* * *

William L. Doyle, who served as sales manager of the Insulated Wire Department of the John A. Roebling's Sons Co. for many years, has resigned his position with the intention of opening a wire plant at Easton, Pennsylvania, in the near future. Robert C. DaCosta, for several years manager of the enameled wire department of the Roebling mills, has resigned his position to become associated with Mr. Doyle in the new venture.

* * *

A permit has been issued to the John A. Roebling's Sons Co. for the erection of an addition to their Hancock street shop, to cost $35,000.

* * *

T. T. Tams and W. A. Bagby have arranged to handle Fisk tires in Trenton. They will also carry Delion, Eureka and Mohawk tires in their recently opened shop.

* * *

All rubber goods, in common with other commodities, used by the State of New Jersey, will after November 1 be bought by the State Purchasing Agent, Edward E. Grosscup. This is in conformity with a law passed at the last session of the Legislature.

* * *

General C. Edward Murray of the Empire Rubber Co. has been made a member of the general committee to arrange for the local reception of the delegates to the Atlantic Deeper Waterways convention on the occasion of their visit to Trenton this month.

* * *

Walter P. Austin, one of the managers at the Delion Tire and Rubber Co.'s plant, has moved his family from Washington, D. C., to Trenton.

* * *

John S. Broughton, president of the United and Globe Rubber Manufacturing Cos., recently returned from a vacation spent at Cape Cod, Massachusetts.

* * *

C. H. Oakley, president of the Essex Rubber Co., is recovering at St. Francis Hospital from an operation for appendicitis. Mr. Oakley was suddenly stricken with the trouble and an operation was at once performed. His condition was at no time serious.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

ALL of the rubber factories are running to full capacity and in many cases double shifts would be utilized if sufficient numbers of workers could be obtained. Large orders continue to be received for all kinds of rubber goods and carload lots are being shipped daily for both domestic and foreign consignment. Several of the plants are considering the erection of additions and plans are now being drawn to provide for these improvements.

* * *

The Alice Mill of the Woonsocket Rubber Co. closed down on Friday night, August 4, for repairs and improvements and resumed on the 16th. One new boiler of the Dillon type, 18 feet by 72 inches, was installed, the other three boilers were reset and a new elevator pump was also installed.

The Millville plant of the same company was shut down for the same period. One of the most important additions to the equipment of this plant is the installation of three new electrically operated freight elevators, by the Otis Elevator Co., of Boston, Massachusetts. This is but one of a number of improvements that have been contemplated and which are now being made as rapidly as possible without interfering with the operation of the plant.

* * *

At the factory of the National India Rubber Co. at Bristol the constantly increasing business calls for large additions to the buildings and equipment and new work is being planned or carried out. The building formerly used as an auxiliary for the curing heats has recently been torn down and a new building, the same height as that of the building adjoining to the eastward, is to be erected adjoining the older structure.

* * *

The Universal Winding Co. has filed intentions, at the office of the city clerk of Cranston, to erect two new buildings at its plant. One of the buildings is to be used for foundry work in connection with the plant and is to be 220 by 161 feet. This is to be located 150 feet north of the No. 1 building and is to be constructed of brick and steel. The cost is given as $40,000. The second building is to be 96 by 17 feet, one story in height and will cost about $5,000.

* * *

E. C. Southwick, secretary of the foreign trade committee of the Providence Chamber of Commerce, has received a communication from a company located in Jaffa, Palestine, that desires to receive catalogs, quotations, etc., from manufacturers of certain goods including rubber goods, for early shipment at the expiration of the European war.

* * *

Officials of the Hope Webbing Co., Pawtucket, on Monday morning, August 21, unfurled two large flags over their office buildings in that city, one a national flag and the other a state flag. In speaking of the occasion, General Manager Charles S. Sisson said that it was an innovation among industrial plants and that the object was to indicate the company's loyalty to both the country and the State.

* * *

The Phillips Insulated Wire Works, at Pawtucket, closed down on August 10 for an indefinite period. Numerous strikes have been called at the plant during the past few months.

* * *

Walter Norton, assistant superintendent of the United States Rubber Co.'s plant at Lycoming, Pennsylvania, who has been making a trip through New England visiting the various plants of the United States Co., was an interested visitor at the factories of the Woonsocket Rubber Co. at Woonsocket and Millville and of the National Rubber Co. at Bristol.

* * *

John Conrick, for several years in the office of the National India Rubber Co., Bristol, has resigned to accept a similar position with the Lee Rubber Tire Co., of Conshohocken, Pennsylvania.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

AS far as government orders are concerned business remains brisk in mechanical, but has fallen off in proofed goods, with the result that solvent naphtha is obtainable at much more reasonable prices than prevailed a year ago. Side lights on the importance of various processes and departments are reflected from time to time in the application made to the tribunals for exemptions. A successful application was made the other day for the manager of a new rubber reclaiming factory on the ground that he was engaged in urgent work for the government. This sounds rather odd to those of us who have long been familiar with the clause in government specifications for rubber goods, notifying that no crumb rubber, reclaimed rubber, or rubber substitute may be used. Possibly this restriction may not be enforced at the present time, for some classes of goods at least. If this surmise is correct, it will be a source of gratification to manufacturers of high-grade alkali reclaim, who have long held that the clause should be deleted. In mentioning government orders, it must be noted that such do not refer to the British Government only, but to the Allies as well, and it may be that the specifications of different countries show variations. I may mention that the analytical tests which government rubber has to stand preclude the use of organic matter such as oils, and, therefore, it may be considered redundant to mention that they are ruled out. Thus the usual stipulation at the present time is "the rubber of the mixture must not yield more than 10 per cent of organic acetone extract, and not more than 10 per cent of organic alcoholic potash extract after removal of acetone extract." I may amplify this reference to reclaimed rubber by mentioning that two new works have recently been started, thus testifying to the good condition of the trade. Later on I hope to say more about these ventures.

SOME PENDING LEGISLATION.

One or two matters concerning politics are not without interest to rubber manufacturers at present. One is the bill which has already passed the House of Lords, which is to compel companies and firms or individuals trading under assumed names, to register the correct names of the partners. Thus the X. Y. Z. Rubber Co., makers of certain rubber goods, will have to register the names of the proprietors for public inspection. A bill to this end was brought in some years ago, but failed to pass. The favorable reception given to the present bill is due to the desire of traders to know whether firms with British titles are owned or not by those who at the moment are enemy aliens.

Turning to another matter, it is common knowledge that many British tire manufacturers have been keen on the stoppage of the imports of American tires, but for certain reasons the government has taken no action in the matter. The importation of other classes of goods, for instance, soap, has, however, been stopped, but there is by no means unanimous opinion among manufacturers that if such war time measures are perpetuated it would be to their ultimate advantage. A manufacturer said to me recently: "I would rather have American competition from over the water than have the Americans coming over here and putting up works next door to mine, which they probably would do."

With regard to pneumatic tires, it was reported that the Ford company was making preparations to produce its own tires and had taken extra land in Trafford Park, Manchester, for the purpose. This was when, in a previous budget, it was proposed to put an import tax on tires. As this proposal did not mature, the idea seems to have been abandoned; at any rate, for the present.

CRUDE RUBBER PRICES.

The price continues to favor buyer rather than seller, though the general opinion seems to be that if the commodity goes any lower it will only be to a trifling extent. Cautious but steady buying for future needs has been the rule lately, though I do not think that much credence may be attached to the somewhat sensational story that one of our largest works has bought very largely at 1*s.* 7*d.* per pound for future delivery. Fine hard keeps up its premium over plantation, the supply being somewhat less than a year ago, and there are the usual buyers who want this quality and will not look at anything else. It was noticeable at a recent auction that fine hard rose ¼ penny per pound while at the same time plantation fell ½ penny. I understand that the slow American demand is to be attributed in part at any rate to the election. On this side we don't let elections interfere with business, but there is probably a difference in the election.

As to the future the opinion is widely held that there will be no more 3 shilling plantation, until peace comes and with it the German demand, which will, of course, be a large one.

CHEMICAL SOCIETY MEETING.

Among the large number of papers which were read and discussions which took place at the annual meeting of the Society of Chemical Industry, held this year in July, at Edinburgh, rubber was not mentioned at all, nor were any of the rubber manufacturers who are members present. In connection with the meeting there was an exhibition of dyes, various fine chemicals, and glass and porcelain laboratory apparatus produced for the first time in Britain and previously obtained from enemy countries. The North British Rubber Co. showed a large variety of erasing rubber goods, which though of course by no means new to British trade, have been imported largely, in the past, from Central Europe. An interesting exhibit was the blue oxide of cobalt made for the first time in Britain by the Beaverhall Colour Co., of Edinburgh, the source being Canadian cobalt ore. The exhibit of the Broxburn Oil Co., Limited, D. R. Stewart's paper on the Shale Oil Industry and the visit of the members to the works of the Pumpherston Oil Co. at Midcalder had associated interests with the rubber trade. This industry, like many others, has benefited by the war. For one thing, since the rise in the price of coal tar naphtha, the shale spirit, which has always been used to a limited extent, has been in greatly increased demand by Scotch proofers, and has probably gone over the border. In the course of a paper on recent developments in coke oven practice it was stated that at one place the waste gases were being burned under iron plates for the production of lamp black. The process was kept a secret and the reader of the paper knew nothing of the quality of the black. This development is of importance because of the scarcity and high price of American carbon black at the present time. One of the speakers said with regard to the utilization of the present glut of coal tar pitch, that the efforts which had been made to convert it into natural asphalt, or at any rate, to a body with the physical characteristics of the latter, had not been crowned with success.

Papers which were read in reference to the manufacture of fine chemicals and medicinal chemicals testified to the great progress which has been made in these branches in the last two years, a branch of manufacture in which Britain has always been backward. This should mean an increased demand for vulcanite and gutta percha, which are used to a much larger extent than in the heavy chemical manufactures. At the close of the meet-

ing a large party of the members visited the works of the North British Rubber Co. and were shown over a considerable portion of this hive of industry, including the new chemical laboratories, where the special apparatus for testing balloon fabrics for permeability to hydrogen was an interesting feature. The new buildings for the solid tire department are nearly finished, the machinery having been delivered. The party was under the efficient leadership of Mr. Porritt, chief chemist, and Mr. Luff, assistant.

PETROL RESTRICTIONS AND THE TIRE DEMAND.

The large and increasing demand of the service for petrol has resulted in civil consumers being limited to certain quantities, which has naturally had the effect of reducing motor traffic, especially long distance pleasure motoring. A resultant effect must be a reduction of business for the tire manufacture, though to what extent it is difficult to say. At this stage, at any rate, it is difficult to find anyone who cares to make a prediction. Already, however, in the West End of London, the discarded victoria and other horse-drawn vehicles have reappeared, and I have been told in the country that horse carriages would be brought out again generally, if there were not a shortage of horses. The push cycle is also being seen in increased numbers, so we may expect a run on carriage, cab and cycle tires this autumn. A wealthy owner of a Ford car with Goodrich tires told me that he had now got level with the owners of heavy expensive cars who used to chaff him, as he could cover a much larger mileage on his allowance of petrol than they could, and nowadays this is the main thing that counts.

COMING TO ENGLAND.

Hugh Fraser Macmillan, who recently left Ceylon on a well-earned leave of absence, completed last June, 21 years in the Ceylon Government service.

During that time he filled the post of curator of the Royal Botanic Gardens, Peradeniya, and has acted periodically as superintendent of the Hakgala Gardens during the absence of William Nock, now retired.

With the reorganization of the Peradeniya staff under the scheme for an Agricultural Department formulated by R. N. Lyne, the Director of Agriculture, Mr. Macmillan was appointed superintendent of Botanic Gardens in Ceylon with a curator to assist him at Peradeniya.

During his 21 years' service in the East Mr. Macmillan has made a thorough study of the flora of the Eastern tropics, in which he was aided by his knowledge of the vernacular languages acquired soon after his arrival in the Island; and as the fruits of his experience he has produced his "Handbook of Tropical Gardening and Planting," which has become a standard work of reference.

A photographer of no mean order, Mr. Macmillan's studies of plant life are in great request both for local and foreign publications.

In addition to his regular duties Mr. Macmillan is lecturer on Economic Products at the School of Tropical Agriculture. He is the author of an excellent illustrated guide to the Peradeniya Gardens, and has written numerous bulletins for the Department of Agriculture, papers for the Agricultural Society and articles for the "Tropical Agriculturist."

The Peradeniya Gardens of to-day owe much of their beauty and attraction to his trained and artistic eye which has also brought him into prominence at the agricultural shows. He was Secretary of the All Ceylon Exhibition of 1912 and in recognition of his services in this capacity he was presented with a special gold medal. He has a host of friends who will welcome him on his arrival in England.

INVENTOR OF MURAC INSOLVENT.

A meeting of the creditors of Morland Micholl Dessau, inventor of "Murac," was held last month at the offices of the official receiver for the Brentford district. Mr. Dessau at this hearing stated that he is an American subject and came to this country in 1893 with a free capital of about £5,000. In 1906 he invented a process for the manufacture of "Murac," to improve low-grade rubber. This invention was assigned to the Murac Syndicate, Limited, which was succeeded by the British Murac Syndicate, Limited, the inventor receiving shares in the company and being appointed technical adviser at a salary of £700 a year, and commissions which amounted to £200 a year. He also invented a machine for washing rubber on which he received one-half the profits, but the business and patents were afterwards sold to the Crude Rubber Washing Co., Limited. The business of this latter company was not successful and the inventor found himself indebted to the London Venture Corporation which had promoted the Crude Rubber Washing company. Although since then he has invented a rubber-capped wooden block intended for use in paving highways, an expanding joint for guttering highways, and a rubber skate, the exploiting of these has been unsuccessful on account of the present war conditions. For the last year he has been employed as a buyer for the Associated Rubber Manufacturers. He has lost on the Stock Exchange and in the raw rubber market, to an estimated amount of £30,000, but it was not until this action was taken by his creditors that he discovered himself insolvent. The official receiver postponed the meeting, intimating that a proposal of composition for the benefit of his creditors should be made, which must not be less than 5*s.* on the pound.

RECLAIMED RUBBER

I have found a trade circular over thirty years old in my rubber archives, which emanates from Loewenthal & Morgenstein of New York and is headed "Rubber Shoddy for galoshes, clothing, hose buffers, insulated wire, and all other kinds of rubber work. Works: Cresskill Rubber Works, Cresskill, N. J." The circular explains that the shoddy is made of old rubber boots and shoes by a mechanical process by which they are finely pulverized and the fibre and other deleterious matter removed, leaving a fine vulcanized rubber powder. Two grades of this powder were made, and it was offered to the rubber trade in this state, with instructions for devulcanization. The process is summarized as follows:

"The powder is put into iron pans about 2 feet deep which are placed in a steam vulcan pan with live steam and covered to prevent condensation of water on the rubber. The heat is kept at 300 F. for 25 hours, after which the rubber is ground on mixing rolls until it will produce even sheets, which occupies twenty to thirty minutes, the rolls being kept at the temperature required for working low grade crude rubber." It is stated that "some manufacturers use 50 per cent of this shoddy for galoshes and from 10 to 75 per cent for belting, packing and mats, but practical experiments are advised in order to determine the quantity which is suitable."

In addition to selling the original shoddy powder to manufacturers the Cresskill Rubber Works also devulcanized it them-

selves and sold the powder in the devulcanized form. This circular evidently relates to the beginning of the now large and important reclaimed rubber industry, and it would be interesting to know whether a satisfactory sheet was really obtained without the addition of mineral oil or other binding matter, as is customary in the mechanical process of today. Perhaps some of our manufacturers who received this circular between 30 and 35 years ago and responded to it might be disposed to relate their experiences. The reference to the extensive use of the substance for rubber belting synchronizes rather ominously with the date given in a preceding paragraph for the deterioration of rubber belting.

BRIEF NOTES OF INTEREST.

The authorities here have discovered that hundreds of rubber covered typewriter cylinders have been shipped by small London firms to neutral countries. Believing that Germany was probably their ultimate destination, many parcels have been seized, and it is anticipated that prosecutions will be instituted under the Customs Exportation Prohibition Acts and the Orders in Council.

The Trading with the Enemy Amendment Act, 1916, has been applied to the property of the Bakelite Co., Limited, Orb Works, Cowley, Middlesex, for which a controller has been appointed.

Owing to extended increase in its solid tire business in Scotland, the W. T. Henley's Telegraph Works Co., Limited, London, has opened a depot adjacent to its Glasgow branch where a hydraulic press is maintained for fitting and removing solid rubber truck tires.

Announcement has been received from Richard Julius Hoffmann, 139 Cannon street, London, E. C., to the effect that he has changed his name by legal process to Richard Julius Arnold.

RUSSIAN RUBBER COMPANY PROFITS.

A general annual meeting of shareholders of the Russian-American India-Rubber Co., "Treugolnik" was held in Petrograd on March 31 (April 13) last. Accounts for the year 1915 were submitted and approved.

The net profits amounted to 12,845,212 rubles [$6,615,284] and the dividend to be paid was fixed at 35 rubles [$18] per share.

The board of directors was authorized to add 9,000,000 rubles [$4,635,000] to the capital of the company for the purpose of extending its business and handling large orders obtained from the Russian Government.

Aside from its nominal value of 100 rubles [$51.50], each new share will include a premium equal to the part of each old share in the company's reserve fund. To facilitate the realization of this new issue of shares, the directors were authorized to draw from the special reserve fund—which is at the disposal of the shareholders—a sum of 5,670,000 rubles [$2,920,050] to pay up, at the rate of 63 rubles [$32.44] per share, a portion of the premium on the new shares, so that the shareholders would have to pay cash only for the balance of the premium due, plus the nominal value of the shares.

Another annual meeting of shareholders of a rubber manufacturing company recently held in Petrograd, was that of the "Bogatyr" Mechanical Rubber Co. The capital of this company is 9,380,000 rubles [$4,830,700] and the profits for the year 1915 amounted to 2,674,261 rubles [$1,377,244]. A 9 per cent dividend was declared.

AUTOMOBILE TIRES IN SWEDEN.

A large demand is reported to exist in Sweden for American automobile tires; there being practically no others on the local market.

As the Entente Allies are allowing to pass their blockade, only the same number of tires as were imported by Sweden in the 12 months preceding the war, very few American tires are getting into that country. Most American cars imported come in without tires and the stocks of tires that are in the country are mostly held by speculators.

It is stated that recently a dealer in a low-priced American car was obliged to pay as high as $300 a set for tires for a car selling in the United States at slightly more than $400 fully equipped.

THE SITUATION IN FRANCE.

By Our Regular Correspondent.

FIGHTING here has increased a hundredfold since I last wrote you. To the vigorous defensive of the Verdun sector our armies, together with those of our Allies, have added a gigantic offensive movement on the Somme front, where rubber-tired automobiles and motor trucks are, like at Verdun, playing a leading part. Probably a hundred thousand are engaged in transport and staff work, and these are consuming about four times as many solid and pneumatic tires as an equal number of machines would wear out under normal conditions in private use.

In spite of this tremendous demand our rubber manufacturers are giving full satisfaction.

DISTRIBUTION OF TIRES.

In the early days of the war there was great lack of organization in the distribution and the repairing of tires, with the result that the wastage was terrific. The suddenness and the extent of the effort necessary to stem the tide of invasion was such that tire economy was considered a matter of no importance. Drivers of cars using pneumatic tires, having neither time nor means of effecting repairs, abandoned damaged tubes and casings by the roadside, and their claims for new ones were never questioned. All this has been corrected. Now each and every car and driver works from a base or depot, into which every worn

RUBBER TIRES RECEIVED FROM THE FRONT.

or damaged tire casing or tube has to be returned before new ones are allowed. From the depot the damaged tires are sent to central repair stations, where they enter a well-equipped shop and are, when possible, made almost as good as new. Repaired tubes are tested, dried, talced and packed in cardboard boxes marked with their dimensions, makes and other necessary indications. Repaired casings are wrapped and marked just as for new ones. These repaired tires are stored in special warehouses and distributed, several hundred a day, to the army machines as needed.

SOLID TIRES.

Similar methods are employed for solid rubber tires. Travelling hydraulic presses, like the one I described and of which I sent you a photograph in a previous letter, are carried on trailers hitched to motor repair trucks. The solid tire depots are also provided with large hydraulic presses. All worn-out solid rubber

tires are returned to the depots of the respective army sectors, special machines pare off the rubber remaining on the steel bases, and the latter, together with the scrap rubber, are sold from time to time, as quantities accumulate, to tire manufacturers and rubber reclaimers, so that, all in all, waste is reduced to a minimum.

TWIN TIRES.

I note that the subject of twin or dual pneumatic tires—which is by no means new here—is attracting much attention in American automobile circles.

Dually mounted pneumatic tires have been used here in France for more than four years, and their use has greatly increased since the outbreak of the war.

Prior to the war twin tires were never recommended for light weight automobiles, being only of advantage on cars in which the weight to be borne by each of the rear wheels was in excess of 1,500 pounds per wheel, practically the limit weight that can be borne, without excessive strain, by current sized pneumatic tires. On such cars it was found that the use of these dual tires was of decided advantage. They required less air pressure per tire than single tires carrying an equal weight and they gave better mileage results.

Under war conditions the use of twin pneumatic tires has greatly increased, especially for ambulance work, and more because of the increased security they afford—one tire can be punctured without necessitating a stop for changing. Further, twin fitments allow the use of repaired casings and tubes that would never stand the strain were they mounted singly.

The objection to dual tires is that they increase the traction effort necessary to move the cars, therefore require more gasolene, and have the bad habit of picking up rocks and throwing them with no small force.

TIRES IN PRIVATE USE.

We are so much absorbed by the war that I have, up to date, failed to mention the fact that very large numbers of private cars have been kept in commission in spite of the war and that these consume considerable quantities of tires. This private demand for tires has also been largely taken care of by our domestic rubber manufacturers.

LEATHER TREADS.

Our tire manufacturers have largely, not to say completely, discarded the leather tread metal-studded anti-skid tires which have so long been in almost universal use in Continental Europe. They have continued to make metal-studded casings, but the studs are now embedded in the rubber tread and in the fabric of the tire, instead of being anchored in a leather cover.

It will be remembered that leather treads were made of chrome-tanned cowhide and required leather taken from the middle of the back of the animal. Chrome tanning made the leather impervious to water and prevented it from softening when wet.

Many attempts had previously been made to launch metal-studded rubber tread tires on the market but these had always failed, chiefly on account of lack of durability, which was due to faulty methods of tire building. The scarcity and consequent high cost of leather has led to great improvements in the making of these rubber tread, metal-studded casings, but it has not as yet been proven that this type will show itself to be equal, let alone superior, to the time-honored leather non-skids.

RUBBER IMPORTS AND EXPORTS DURING 1915.

Statistics for the year 1915 have been recently published. Although the individual items of these statistics are not as well defined as in normal times it is probable that those for rubber represent more imports of rubber and rubberized clothing, footwear, etc., than tires. It is, of course, true that in the first year of the war large quantities of rubber tires were imported, especially solid tires for American motor trucks, which came into this country in great numbers.

The imports of manufactured rubber in 1915 amounted to $4,928,000, as against $4,970,000 the previous year.

Exports of rubber goods, largely tires, amounted to $13,958,725 in 1915, as compared with $16,395,350 during 1914.

SALES OF AMERICAN CHEWING GUM.

An interesting development of the war times, though not exactly a rubber item, is worthy of mention.

American chewing gum has long been sold in Paris and other centers, but almost exclusively to American visitors, for whose convenience it was stocked by druggists patronized by them. Since the outbreak of the war chewing gum has become popular with native consumers, and it is now being sold in many parts of the country, not only by druggists, but also by tobacconists and other retail dealers. The gum is presented in American style, but with French labels, and it is retailed at relatively the same prices as in the United States.

THE CHEMICAL INDUSTRY.

I have repeatedly mentioned to you the scarcity of chemicals for the rubber industry and the necessity of importing much of these from abroad.

Conditions in our chemical industry have greatly improved. War orders and the absence of German competition have made this a really profitable industry, and it has developed to a remarkable degree. The manufacture of chemicals, materials for explosives, medicines, antiseptic preparations or the treatment of wounds, etc., has been developed along with the manufacture of benzine, benzol, toluene and the like, and acids and coal tar products, which were formerly imported from Germany, are now being produced in excellent quality in France.

Our rubber manufacturers are still importing many chemicals and compounding ingredients, but the energy and skill of our chemical manufacturers is achieving success and it will not be long before almost all our requirements will be produced by domestic manufacturers.

SECOND SAMPLE FAIR AT LYON.

Beginning March 1, 1917, and continuing for 15 days, the Second Annual Lyon Sample Fair will occupy the attention of the commercial world. The first fair was opened on March 1, 1916, and although there was scarce time to work out the details of such a great undertaking, it proved, nevertheless, to be an immediate success and gave promise of accomplishing its original purpose of establishing a sample fair in France similar to the great Leipzig Fair held in Germany.

At the last Lyon Sample Fair, it will be remembered, rubber companies of France, England, Spain and Italy were well represented and all reported unexpectedly large sales.

American rubber concerns should take advantage of this opportunity to present their products to French buyers. The total sales made in all merchandise from samples at the last fair exceeded $30,000,000.

TRADE NOTES.

A severe fire resulting from a short circuit recently caused damages estimated at more than $60,000 to the rubber factory operated at Billancourt, near Paris, by Arthur Gobert, manufacturer of friction tape, rubber solutions, and reclaimed rubber.

The Société Générale des Établissements Bergougnan, Clermont-Ferrand, well-known manufacturer of rubber tires and general rubber goods, has issued 16,250 new shares of 500 francs [$96.50] each, completely paid up by the reserve fund of the company. This reserve fund amounts to 10,000,000 francs [$1,193,000] and is wholly made up of funds derived from premiums paid by subscribers on shares previously issued to increase the company's capital. These new shares are to be distributed

among shareholders at the rate of one new share for two old shares, taking part in the profits earned from October 1, 1915, on. The Bergougnan company's profits for the fiscal year 1913-1914 amounted to 6,746,445 francs [$1,303,064].

At a meeting recently held by the shareholders of the Société des Établissements Hutchinson, tire and rubber manufacturers, a dividend of 30 francs [$5.79] per share was declared for the year 1915 on preferred shares, while a 40-franc dividend [$7.72] will be paid on common shares. In 1914 the common shares only received 25 francs [$4.82] per share. The total profits of the company in 1915 amounted to 2,531,525 francs [$488,525] of which a large amount was written off to the reserve fund.

FRENCH GOVERNMENT SPECIFICATIONS FOR RUBBER MASKS.

The French Government specifies the following composition and tests for the rubber employed in the manufacture of army masks:

New rubber, not less than 50 per cent. Sulphur of vulcanization, not to exceed 5 per cent of the rubber present. Free sulphur, not over 1 per cent. Mineral residue (ash), not over 35 per cent. Moisture, not over 3 per cent. Reclaimed rubber and substitutes, none. Minimum thickness, 1 millimeter [.03937 inch.]

The rubber must withstand a tensile strain of 250 grams per square millimeter without breaking, and be able to stretch at least 225 per cent.

Rubber Planting Notes.

FUNGUS OF RUBBER IN MALAYA.

IN the last two years the fungus *Ustulina Zenata* has attained prominence in the Federated Malay States as the cause of a root disease affecting rubber trees over ten years old.

This root disease was first noted early in 1913 by E. Sharples, mycologist of the Agricultural Department of the Federated Malay States, but it was 12 months later that the fungus was isolated in pure culture and the fruit bodies found. Evidence obtained during the last year indicates that the fungus has been causing damage for several years. A manager of a rubber estate in Johore reports that he has been losing trees, owing to its attacks, since 1907.

This same fungus is the cause of a common root disease of tea in Ceylon, though it is not yet certain that it attacks *Hevea* in that country.

In Malaya, the fungus is found on old plantations in every part of the peninsula. It attacks old rubber trees, especially in the region of the Collar; only in advanced cases does the fungus spread up the stem and it seldom reaches two feet above the soil level. The diseased wood, on exposure, is found to be dry and tindery, and, running through the diseased tissues, conspicuous black lines are to be seen.

Fungus appears to be one of the chief agents causing the rotting of rubber stumps and logs left in plantations after thinning out operations. It enters the stumps and grows down them into the lateral roots. The roots of growing trees in contact with these infected laterals are quickly attacked.

Remedial measures against this root disease consist of thorough cleaning of timber and jungle stumps when clearing, and of rubber stumps and logs at the time of thinning-out. Strict sanitation methods, thorough clearing, attention to wounds, etc., should be strongly advocated lest fungoid diseases impair the future of the rubber planting industry.

CRUDE RUBBER INDUSTRY IN PERAK.

According to the annual report for 1915 by the British Resident in Perak, Federated Malay States, the quantity of crude rubber exported during the year was 16,663 tons as against 11,041 tons in 1914, an increase of 5,622 tons.

The acreage in rubber alone of estates exceeding 100 acres in area was 164,022 acres, with 2,226 acres in addition interplanted with catchcrops; of this area 2,195 acres was planted in the year under review. The crop for this total area was given as 12,112 tons.

RUBBER IN SELANGOR.

The annual report for 1915 by the British Resident at Selangor, Federated Malay States, recently published, contains some interesting details concerning the rubber planting industry in that state.

The approximate area under rubber was 255,326 acres. In some estates in the Klang district where rubber was interplanted with cocoanut trees, the latter were cut out in order to allow the rubber trees to develop. In many small holdings, also, cocoanut trees in good bearing have been cut out in order that rubber may be planted. This practice on the part of small owners is condemned by the Director of Agriculture, Federated Malay States, who advises that it be discouraged as far as possible.

About the middle of the year a demand suddenly sprang up among small cultivators for the seed of what was known as "getah chat," a species of rubber which was said to grow faster and give better return than *Hevea*. The origin of the report had not been discovered, but inquiry proved that the tree in question was identical with the *Ceara* rubber tree, and steps were taken to warn cultivators of its low economic value as a rubber producer.

CRUDE RUBBER EXPORTS FROM THE GOLD COAST COLONY.

According to a report of the Comptroller of Customs at Accra, British Gold Coast Colony, the value of the total exports of crude rubber from that colony during the year 1915 amounted to £25,167 [$122,475], as compared with £21,631 [$105,267] in 1914; showing an increase of $17,208.

RUBBER TRADE OF JAVA AND SUMATRA.

According to a recent report of the American Consul at Batavia, Java, the United States bought 7,486,080 pounds of plantation rubber from Java in 1915 and maintained for the whole year its rank as the island's best customer, which it had won in the January-June half of the same year. Great Britain was second with purchases of 4,818,240 pounds, and the Netherlands third with 2,885,120 pounds. The total for the year was 96 per cent larger than for 1914, amounting to a total of 16,705,920 pounds, as compared with 8,581,440 pounds in 1014.

The Dominion of New Zealand has placed an export embargo on crude and manufactured rubber.

RUBBER SAMPLES FROM NORTHERN NIGERIA.

The Imperial Institute, London, England, has recently published the results of tests made on a sample of rubber produced in Northern Nigeria.

The sample lost 26 per cent. of its weight in washing (due to the large amount of impurities). The analysis of the residue showed:

Caoutchouc	49.2 per cent.
Resin	47.7 per cent.
Proteins	2.4 per cent.
Ash	0.7 per cent.

The caoutchouc that was separated was almost black and its physical properties were poor. From the analysis the investigators concluded that the sample probably came from the *Ficus vogelii*. Samples of rubber produced from the latex of *Ficus vogelii* growing in Gambia and on the Gold Coast had previously been tested at the Imperial Institute.

THE RUBBER TRADE IN MALAYA.

By Our Regular Correspondent.

THE annual meetings of many of the rubber estate companies of the Malay Peninsula have been coming thick and fast in the last two months, and to those connected with the industry a comparison of the reports for 1915 is of interest. Though companies may differ widely in degree, some owning new estates which are just beginning to feel their feet, and others being old established concerns—as old established goes in the Eastern rubber trade—one dominant fact stands out in all the reports; that is, 1915 was a good year. Among most of the companies which have reached the paying stage, a dividend of less than 10 per cent for the year is exceptional. In the gilt-edged varieties we find figures calculated to take away the breath of those who are not acquainted with rubber's paying properties. There are companies which have paid 160 per cent and more for the year, and cent per cent is not by any means uncommon. Those outside the magic circle can only vaguely imagine what it feels like to get one's investment, and more, returned annually.

As perhaps the majority of the companies are registered in England, and the bulk of the shareholders reside there, a matter of immediate concern to directors at the present time is that of excess profits taxation. Just now, no one seems to have any definite idea as to what rubber companies will be called upon to pay in this direction, and all that can be done is to carry forward substantial sums to cover any possible demands. Naturally a Chancellor of the Exchequer, with war expenditure to provide for, is likely to keep a sharp eye on companies which pay big dividends. While the most prosperous companies feel that they cannot reasonably object to whatever calls are made, many of the newer ones feel that they have a legitimate grievance in one respect. Estates may have reached a paying basis only since the war began, and shareholders feel that not only is it impossible to attribute their profits to the fact that war is being waged, but that profits would probably have been a great deal bigger if there had been no war. But these are questions which have still to be decided, and, as I have said, all that companies can do at present is to retain an ample reserve.

The matter of forward contracts is also prominent in most reports. As is generally known, forward contracts have become a feature of the rubber business of late years, for when the last echoes of the boom of 1910 had died away, and the price began on a steady downward course, many companies became anxious regarding the policy of selling from month to month, and would agree to sell so much of the monthly output at a fixed price for, say, one year. The days when a price of four shillings a pound was not at all unlikely seemed gone forever. A two-shilling period appeared to have set in, so it was thought better to sell at, say, a fixed 2*s.* 4*d.* for the year than to fluctuate from 1*s.* 10*d.* to 2*s.* 8*d.* These figures are, of course, merely approximate. Naturally a forward contract policy cuts both ways, and in 1915 the cut happened to be against the seller. In the last six months of the year there was a sharp rise in prices, and companies which had contracted to sell so much of their output at 2*s.* 5*d.* a pound bemoaned the fact that in the absence of forward contracts they could have got an easy 2*s.* 11*d.* However, directors console themselves with the reflection that the forward contract policy seemed best when the year began, and they could not be expected to foresee what the last few months would bring to light.

A point in reports which those concerned with the manufacturing side of the business will note with pleasure, is that it is now quite the rule for companies to earmark a certain portion of their output, to be used in the scheme for investigating new uses of rubber. It is generally admitted nowadays that the methods of employing rubber are only beginning to be discovered, and with the export from Malaya increasing practically month by month, it is easy to see that this is a point which concerns the producer as much as the manufacturer. That companies owning estates realize this is now quite evident, and with the money and produce which is being set aside for the purpose, one hopes to hear of a big step forward in the development of the product's usefulness.

As regards the increasing output from Malaya, a passage from the last report of the Colonial Secretary of the Straits Settlements is of interest. Here it is said that rice cultivation, formerly the staple industry of the Straits Settlements and the Federated Malay States, is fast disappearing. The Malay who owns a few rubber trees can live in comfort, have silks for himself and his family, and buy all the imported rice he wants—a decided contrast to the lot of the rice cultivator, who has to cultivate with all his might, in order to support a bare existence. Demands for rubber plantations are increasing enormously, and where possible, as regards small native holders, the government lets them out with the proviso that trees are grown in conjunction with the cultivation of more homely products. Meanwhile, rice fields are allowed to lie fallow so that cultivation can be taken up again at once if necessity arises.

The following figures, which are those for the first quarter of the present year, show the increase in the export of rubber from Malaya down to the present time.

	1914.	1915.	1916.
January ..... *tons*	2,542	3,473	4,471
February	2,364	3,411	5,207
March	2,418	3,418	4,429
Totals	7,324	10,302	14,107

PECULIAR METHOD OF GATHERING RUBBER IN SIERRA LEONE.

A CURIOUS and interesting method of collecting *Funtumia elastica* rubber in Sierra Leone is described in a book recently written by O. H. Newland, director of the Peneiro Rubber Estates, Limited.

The natives fell the tree and cover it with dry grass, which is set on fire. The heat generated is just sufficient to cause a practical coagulation of the latex in the lactiferous vessels. The bark is then bruised off by pounding with stones, and the debris taken down to the river and washed thoroughly to separate the bark from the rubber. The separation is seldom complete, and the result is a dirty rubber, fetching 2*s.* [48 cents] per pound.

This primitive method, however, is not universal in Sierra Leone. The more intelligent natives ascend the trunk of the standing tree by means of a sling passed around the trunk. One end of the sling is provided with a loop which fits over the right thigh. The worker keeps his left foot on the sling and thus, by moving the rope up the tree the ascent is rapidly accomplished and when the desired point is reached, both hands are free to make the tapping.

The climber carries a chisel with which he cuts vertical as well as transverse oblique grooves, forming a rough "herring bone" pattern, which may be continued the whole length of the trunk, and even extend up to the main branches. The flow of latex commences at once, and follows the vertical channel into a calabash placed at the base of the tree, being guided by means of a lip of clay or a chip of wood. The quantity of latex procured at one tapping varies from a pint to two quarts per tree. After each tapping the tree is allowed to rest several months, during which the wounds heal. On the second tapping the same form of cut is made upon the opposite side of the tree, and the transverse channels often intersect those made previously.

In gathering the vine rubber of the *Landolphia owariensis*, the natives add lime juice to hasten coagulation when it is necessary to do so. Usually, however, the *Landolphia* latex coagulates in the tapping wound almost immediately upon exposure

to the air. Ofttimes the collector merely smears the fresh latex upon his naked body, until enough has been coagulated to be stripped off and formed into a small ball, which serves as a nucleus for winding on the strips of fresh latex, as the new cuts are made.

THE RUBBER TRADE IN DUTCH GUIANA.

By Our Regular Correspondent.

THE report on the leaf disease prevailing in the colony made by the Agricultural Department has not yet been published, although it is said to be completed. The matter has been treated at length and should furnish interesting reading.

In the neighboring colony of British Guiana Mr. Bancroft mentions in his report on the South American Leaf Disease the following improved methods of treating the disorder:

"Six pounds of copper sulphate are dissolved in five gallons of water in a wooden vessel. Then four pounds of lime are slaked in a little water and put in a tub with 45 gallons of water; it is stirred well and allowed to settle. After it has settled the clear supernatant lime water is poured off and mixed with the copper solution, the whole being thoroughly stirred for at least five minutes. Care must be taken to determine that all the copper has been precipitated and this can be done in the usual way by testing the mixture with a clean, bright blade of a knife. If copper is found deposited on the knife blade, then there is copper in the solution and more lime water is to be added." It is claimed that this method insures a mixture which will act more quickly than the old method, and also that the fungicide is more effective.

The quickness of action is of great importance in dealing with many fungoid attacks, especially so in the case of the present leaf fungus attacking rubber plantations. What treatment will be recommended here in Dutch Guiana is hard to tell, but as far as can be gathered, a treatment of spraying will be instituted.

On the government rubber plantation "Slooywijk" the disease is rampant, and measures have been taken to cut down the trees and plant in their stead coffee, which, in the government's opinion will be more remunerative in the near future.

On other plantations in the colony, the disease does not appear to have such disastrous results, and hopes are entertained for an eventual speedy recovery.

RUBRER TAPPING UNREMUNERATIVE AT PRESENT.

Tapping operations have been carried out on only a few estates during the past six months, owing especially to the want of lucrative markets, but, it is said, as soon as the war is over, a general tapping campaign will be commenced, when it is anticipated an increase in the price will follow.

BALATA PRODUCTION LARGE.

The balata industry is showing signs of vigorous health, and several thousand bleeders are engaged in gathering this season's harvest, which is expected to be large. Several parcels are arriving daily from the interior and if weather conditions remain as satisfactory as at present, the production will be a large one. Government figures show the production from January to June, 1916, 234,840 kilos [517,728 pounds]; January to June, 1915, 74,222 kilos [163,630 pounds]. The bulk of the product is yet to arrive, August and September being the greatest productive periods.

BLEEDERS EMIGRATING TO FRENCH GUIANA.

One of the principal collectors has transferred his office to French Guiana, where he has joined company with a wealthy French combination and is said to be reaping a big harvest. Many of the bleeders employed at Cayenne are old seasoned Surinam men who left the colony when the new regulations were instituted here. They find French conditions much better and can earn more money.

French Guiana promises to become a most important balata center, and already reports are going the rounds that in 1917 most of the best bleeders from this colony will join their friends in the new fields at Cayenne.

DRAINAGE AND IRRIGATION NEEDED.

The recent heavy rains which have caused flooding in many districts where agricultural pursuits are carried on, again brings forward a question which has been raised more than once in the local press, viz., the possibility of a new Department of Irrigation and Drainage being formed.

It is well known that on drainage and irrigation hang most of the agricultural problems of this colony. It is certainly worth while getting to the root of the matter, for with good drainage and irrigation, even the most backward farmer is fairly certain to earn a competency.

When one considers the enormous advantage to be gained by the colony if the best and highest returns are obtained to the acre of cultivated land, it seems lamentable that no more effort has been made than has actually been the case.

OTHER AGRICULTURAL REFORMS NEEDED.

It would be far wiser for us to face, not only this question of drainage and irrigation, but also the question of building up a solid, thriving peasantry, the establishment of agricultural schools not confined to one district, the creation of a more elaborate system of school gardens, and a carefully devised and extensive scheme of field instruction. In other words we must face our agricultural problems and be prepared to spend more money on schemes which are bound, if properly conducted, to prove sound investments. One has but to look at the money voted for the Agricultural Department to be assured that it is impossible for those responsible for the agricultural progress of the colony to accomplish very much. No, we have to face the position. If we are to do work of a permanent nature we must find the money to do it with. Other problems of even less importance have, in the past, received sufficient money to carry them through. Why not agricultural problems?

RUBBER AND BALATA INDUSTRY IN NORTHWEST BRITISH GUIANA.

According to an official report on the industrial conditions in the Northwest District of British Guiana and covering a period of nine months ended December, 1915, very little work has been done in the balata industry in that district during the period covered and no large yields are expected for the present year.

The Consolidated Rubber & Balata Estates, Limited, surrendered 73 of their licenses. The following table shows the shipments of balata for the nine months:

Barima District	385 pounds
Barama District	1,461 "
Total	1,846 pounds

The imports of balata from Venezuela into British Guiana during the period covered amounted to 29,945 pounds valued at $7,761.78.

The area under rubber was increased 50 acres and the Consolidated Rubber & Balata Estates, Limited, was engaged in extending the cultivation on the land held by them under lease on the Aruka river; 80 acres were cleared and 47 acres empoldered and planted up with Para rubber—100 plants to the acre—and interplanted with catch crops of ground provisions.

This company was engaged in tapping the trees of the David Young Estates, Aruka, now the property of the company. They shipped from this plantation more than 5,000 pounds of rubber of very good quality.

The tapping at the experimental station was continued with satisfactory results, and a further block of trees was prepared for tapping in the present year.

During the period covered by the report the rubber cultivation of the district was rather severely attacked by the

Hevea leaf disease. Active measures consisting in spraying with Bordeaux mixture were undertaken to cope with the disease. It was, however, impossible to say whether the steps taken would eradicate it. The Assistant Director of Science and Agriculture, Mr. Bancroft, visited the district during November in connection with the outbreak of the disease.

There was no increase in the area under rubber cultivation at the Experimental Station. The existing cultivation was, however, well maintained.

RUBBER TIRES IN GUATEMALA.

THE American Consul at Guatemala City, Guatemala, has made a very interesting and timely report on the use of rubber tires in that country.

In Guatemala City rubber tires are used on approximately 307 carriages of all sorts, 113 automobiles, 573 bicycles and 17 motorcycles; a total of 1,110 vehicles, and it is safe to say that in the rest of the country there are not more than 15 or 20 automobiles and rubber-tired carriages, while bicycles and motorcycles are practically unknown outside of that city.

CUSTOMS TARIFF.

There is no specific provision in the Guatemalan customs tariff for rubber tires, but, upon request from the Consul, the Director General of Customs stated that such tires were classed with carriages and their accessories, and paid duties ranging from $4.09 to $7.21 per 100 pounds.

When shipped alone rubber tires are taxed $7.21 per 100 pounds, but when shipped with vehicles are subject to the same duty as the vehicle to which they appertain.

All of the duties are payable one-half in United States currency and one-half in the money of the country.

IMPORTS OF TIRES.

Tires are not listed as separate items in Guatemalan import returns, but are included under several headings, "Accessories for vehicles," "Automobiles and accessories," "Velocipedes, bicycles and accessories," which include so many things besides rubber tires that it is hardly possible to form an idea of the amount and source of the tire imports.

RUBBER IMPORTS OF THE DOMINICAN REPUBLIC.

The American Vice-Consul at Santo Domingo reports that during the year 1915 the Dominican Republic imported rubber and manufactures of rubber from the United States amounting to $31,965. Porto Rico ranked second with $1,800; $365 was imported from France; $215 from Spain; $118 from Germany, and only $79 worth of rubber goods were imported from Great Britain. During the year covered by the report, $66 of waste rubber was shipped from Santo Domingo to the United States.

RUBBER GOODS IMPORTED BY ARGENTINA.

In a report for the year 1915 just published, the American Vice-Consul at Buenos Aires states that during the year Argentina imported $103,153 of rubber tubing, weighing 363,196 pounds, and other rubber goods valued at $193,175, of which the weight and nature are not given.

THE FIRST RUBBER FACTORY IN JAVA.

The Nederl. Indische Caoutchouc Fabriek (Netherlands India Rubber Works), Bandoeng, Java, is the name of the rubber company that will soon start manufacturing mechanical rubber goods in the island of Java. According to L. A. van Rijn, director of the company, who passed through New York on his way to the Far East, the machinery is being installed as rapidly as possible and later on the company will undertake the manufacture of solid tires. Mr. van Rijn was formerly manager of the Netherlands Gutta Percha Co., Singapore, Straits Settlements, mention of which was made in THE INDIA RUBBER WORLD, July, 1907.

PROPOSAL TO REDUCE TARIFF ON MANUFACTURES OF BRAZILIAN RUBBER.

A bill has been introduced into the Brazilian Congress proposing to encourage the consumption abroad of Brazilian rubber by means of reduced import duties on products manufactured of such rubber. The new bill provides for a reduction of 95 per cent of the ordinary duties on such articles, if they are accompanied by a declaration from the manufacturer, duly authenticated by a Brazilian consul, attesting that the goods are made of "Fine Para" rubber. The words "Para Rubber, Brazil" or their equivalent in the language of the country of origin must be stamped on such articles. On certain grades of insulated wires and cables, in the manufacture of which Para rubber has been used, the regular duty is to be reduced 90 per cent. It is proposed to make pneumatic automobile tires not made of Brazilian rubber (present rate 5 per cent ad valorem) dutiable at 15 per cent ad valorem.

This measure differs from the Budget Law passed by the Brazilian Congress in 1915 in that no discriminatory surtaxes are imposed on articles made of other than Brazilian rubber. The 1915 law fell into disuse because there were no means for distinguishing between the contents of pure Para and other rubbers. With a view of remedying this difficulty, the new bill prescribes a number of tests for determining whether articles are made of Brazilian rubber. Thus goods admitted at the reduced rates must stretch six times their size without breaking and must stand all the elasticity and compression tests required by certain French organizations such as the French State Railways, the Arsenal at Châtellerault, and the Forges et Fonderies de Pont-à-Mousson, and may also be subjected to other tests.

Commenting upon this proposed modification of the Brazilian customs laws, our contemporary, "Wileman's Brazilian Review," says that the Brazilian import trade in rubber goods is not very big and that it doubts if many will be induced to certify that the constituents of goods that consist "for the great part of chemicals" contain purely Para rubber, but some no doubt will be found, and among them probably the parties that the bill promoted by Dr. Passos Miranda will favor. If it is left to the discrimination of the Custom House, it is pretty certain that few manufactures will pass the test and that those which do will get a practical monopoly. Our contemporary further suggests that this probably is the real object of the promotion of the bill.

A rubber manufacturing industry is being gradually developed in Brazil, thanks to the protective customs tariff, and it is thought a reduction of the tariff such as proposed in this bill would mean its extinction.

PARCEL-POST CONVENTION WITH CHINA.

A development of interest to all exporters, including rubber concerns, is the parcel-post convention recently concluded between the United States and China and which took effect August 1, 1916.

Parcel-post packages exchanged between these two countries must not weigh more than 11 pounds nor measure more than 3 feet 6 inches in length, and 6 feet in length and girth combined, and, in the case of parcels for or from non-stream-served places in China, must not exceed 25 cubic decimeters [1 cubic foot] in volume.

Postage on parcels sent from the United States to China is at the rate of 12 cents per pound or fraction of a pound; and from China to the United States at the rate of 35 cents (Chinese currency) per pound or fraction of a pound, except that on parcels for or from non-stream-served places in China an additional Chinese domestic parcel-postage may be levied and collected by the Chinese service. Parcel-post packages for China may be registered.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED JULY 18, 1916.

1,191,200. Clothing protector comprising a protective apron of moisture proof material. M. J. Liebenstein and L. H. Emsheimer, assignors to A. Stein & Co.—all of Chicago, Ill.

1,191,219. Hose clamp. C. Pelter, assignor of one-half to J. L. Eggers—both of Walla Walla, Wash.

1,191,318. Automatic tire alarm. F. N. Kelsey, assignor to A. H. Bowditch—both of New Haven, Conn.

1,191,320. Hose supporter. C. P. Kuehr, assignor to A. Stein & Co.—both of Chicago, Ill.

1,191,402. Demountable rim. A. J. Glau, San Ardo, Calif.

1,191,444. Golf practicing device comprising an elastic hollow loop. A. G. Lott, Washington, D. C.

1,191,498. Combination leather sole and rubber heel. O. C. Davis, Brockton, Mass.

1,191,500. Rubber sole with imitation welt strip. O. C. Davis, Brockton, Mass.

1,191,516. Nipple protector. R. Keil, New York City.

1,191,543. Shoe shank arch cushion comprising a solid rubber block. J. A. Smith, assignor of one-half to W. N. Dorsett—both of Washington, D. C.

1,191,577. Demountable rim. R. A. Eckberg, Des Moines, Iowa.

1,191,578. Massage brush. O. Englund, Chicago, Ill.

1,191,604. Shaving brush. O. S. McCurdy, Wilkinsburg, Pa.

1,191,785. Corset. R. Heindrich, New York City.

1,191,788. Water shoe. A. P. Horn, Fort Thomas, Ky.

1,191,820. Rubber stamp. W. J. Pannier, Jr., assignor to Pannier Bros. Stamp Co.—both of Pittsburgh, Pa.

1,191,836. Life-preserving jacket. S. Sarosiek, Nutley, N. J.

1,191,866. Rubber tired vehicle wheel. E. Amodeo-Salvator, Brooklyn, N. Y.

1,191,894. Spring tire with rubber cushions. J. E. Hart and A. Benzinger, Columbus, Ohio.

ISSUED JULY 25, 1916.

1,192,036. Resilient tire. T. L. Carbone, Charlottenburg, Germany.

1,192,038. Dust cap for tire valves. C. W. Cleveland, Louisiana, Mo.

1,192,039. Toy construction block comprising two rubber disks. A. D. Converse, Winchendon, Mass.

1,192,090. Automobile tire. R. M. Merriman, Akron, Ohio.

1,192,147. Demountable rim tool. O. A. Wood, Blissfield, Mich.

1,192,149. Tire armor. P. W. Anderson and J. T. Kennelly, Rawlins, Wyo.

1,192,186. Respirator. S. W. Greene, East Greenwich, R. I.

1,192,222. Rim for automobile tires. J. S. O'Gorman, Portland, Oreg.

1,192,238. Inner tube for pneumatic tires. R. C. Spratling, assignor to Opelika Pneumatic Tube Co.—both of Opelika, Ala.

1,192,259. Water-marking wheel embodying an annular pneumatic tire-like tube. J. N. Anderson, Lincoln, N. H.

1,192,291. Protector for pneumatic tires. R. G. Falconer, Litchfield, Ohio.

1,192,352. Tire valve cap. O. A. Smith, assignor of one-half to E. C. Henn—both of Cleveland, Ohio.

1,192,357. Inhaler. W. R. Thatcher, Oskaloosa, Iowa, and H. Dixon, Dayton, Ohio.

1,192,495. Resilient tire. J. F. Carlson, Attica, Ind.

1,192,496. Resilient tire. J. F. Carlson, Attica, Ind.

1,192,554. Internal armor for pneumatic tires. A. Nielsen, Brigham, Utah.

1,192,622. Twin connection for connecting a suction hose with a fire hydrant. W. H. B. Halahan, Rye, N. Y.

1,192,648. Tire protector. J. T. Landaiche, Remy, La.

1,192,683. Catamenial appliance. S. B. Potter, Washington, D. C.

1,192,831. Playing ball. W. R. Knight, Belleville, assignor to St. Mungo Manufacturing Co. of America, Newark—both in New Jersey.

ISSUED AUGUST 1, 1916.

1,192,853. Tire rim. P. W. Burford, East Rochester, N. Y.

1,192,860. Coupling for gas hose. J. J. Carey, Brooklyn, N. Y.

1,192,924. Automobile tire protector. R. S. Miller, Red Sulphur Springs, W. Va.

1,192,969. Massage appliance. E. Winton-Charteris, London, England.

1,193,011. Hose nozzle. H. Gibbs, assignor to W. D. Allen Manufacturing Co.—both of Chicago, Ill.

1,193,086. Faucet spray attachment. M. Thomsen, Chicago, Ill.

1,193,088. Demountable rim. H. J. Trares, Edwardsville, Ill.

1,193,108. Rubber tire. A. K. Allen and C. A. Allen, Seattle, Wash.

1,193,198. Resilient heel. J. Solomon, Oberlin, Ohio.

1,193,250. Automobile floor mat. G. F. Foss, Montreal, Quebec, Canada.

1,193,287. Beard softener of rubber. T. G. Morgan, Shamokin, Pa.

1,193,392. Anti-skid tire chain. R. T. Hughes, Kansas City, Mo.

1,193,476. Force pump. M. Block, assignor to Illinois Force Cup & Specialty Co.—both of Chicago, Ill.

ISSUED AUGUST 8, 1916.

1,193,500. Auxiliary tread. O. Basten, assignor to Rutherford Rubber Co.—both of Rutherford, N. J.

1,193,524. Atomizer. T. A. De Vilbiss, assignor to The De Vilbiss Manufacturing Co.—both of Toledo, Ohio.

1,193,529. Bath mitten, comprising a mitten of rubber sponge and a tough rubber coat lining the inner side. J. Ellis, Chicago, Ill.

1,193,608. Insole forming an inflatable arch support. P. O. Poulson, Roswell, N. Mex.

1,193,715. Fabric for tires and the like. R. B. Price, assignor to Rubber Regenerating Co.—both of Mishawaka, Ind.

1,193,781. Demountable rim for vehicle wheels. C. F. Heinig, assignor of one-fourth to M. L. Baugham—both of Indianapolis, Ind.

1,193,810. Demountable rim. G. S. Maxwell, assignor of one-half to M. A. Bayles—both of Washington, D. C., and W. F. Hale, Nokesville, Va.

1,193,865. Dust cap for valve-stems. R. M. Brown, Wilmington, Ohio.

1,193,991. Rubber top. F. A. Cigol, Little Falls, N. J.

1,193,922. Musical rubber ball. F. A. Cigol, Little Falls, N. J.

1,194,020. Demountable resilient tire seating rim for automobile wheels. J. G. Hodgson, Maywood, Ill.

1,194,081. Resilient tire. E. L. Scranton, Rising Sun, Ind.

1,194,120. Cushion tire. J. S. Bahen, Rock Island, Ill.

1,194,136. Demountable rim. B. A. Bryon, Ridgefield, Conn.

1,194,152. Cushion insole for boots and shoes. P. F. Douglas, Minnedosa, Manitoba, Canada.

1,194,161. Antiskidding device for tires. G. B. M. Foust, assignor to C. H. Keith—both of Cleveland, Ohio.

1,194,177. Cushion tired wheel. A. H. Henderson, assignor to The Henderson Rubber Co.—both of Baltimore, Md.

1,194,193. Adjustable sweat band, comprising elastic sections, for headwear. L. Kronthal, New York City.

1,194,215. Medicine applicator and moistener. J. O. Morrison, Anderson, Ind.

1,194,253. Armored tire. R. E. Stump, Fresno, Calif.

1,194,279. Blow-out patch for pneumatic tires. J. N. Davis, Denver, Colo.

1,194,285. Guard rim for pneumatic tires. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York City.

1,194,322. Vehicle tire construction. W. S. Temple, Mount Vernon, Ohio.

THE DOMINION OF CANADA.

ISSUED APRIL 30, 1916.

168,564. Fly swatter composed of a perforated web of rubber. The Standard Vending Machine Co., Hazelton, assignee of G. W. Gomber, Conyngham—both in Pennsylvania.

168,583. Life preserver. G. E. Fell and G. A. Fell, Buffalo, N. Y.

168,639. Protector and non-skidding band for tires. A. T. Hughes, Kew Green, Surrey, England.

168,719. Life preserver. The American Life Buoy Co., assignee of B. Franklin—both of Chicago, Ill.

168,811. India rubber shoe pad. W. W. Phillips, 142, 144 and 146 Old street, London, England.

168,813. Syringe. J. H. Pruitt, Fort Myers, Florida.

168,919. Teat cup for milking machines. T. N. Fletcher, Hamilton, Auckland, New Zealand.

168,980. Ear drum. G. J. Wagar, Detroit, Mich.

169,020. Tire calipers. The B. F. Goodrich Co., New York City, assignee of J. R. Gammeter, Akron, Ohio.

169,021. Tire calipers. B. F. Goodrich Co., New York City, assignee of H. E. Curtis, Dayton, Ohio.

169,058. Pneumatic tire. A. Baigne, Montreal, Quebec, Canada.

169,068. Method of marking rubber. M. H. Clark, Hastings-on-Hudson, N. Y.

169,105. Nasal irrigator. C. H. W. Moellering, Newark, N. J.

THE UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

In order to give the public the advantage of having abridgments of specifications up to date while retaining their numerical sequence, applications for patents made subsequent to 1915 are given new numbers when their complete specifications are accepted, or become open to public inspection before acceptance. The new numbers start with No. 100,001 (without any indication of date), and supersede the original application numbers in all proceedings after acceptance of the complete specifications.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 5, 1916.]

4,073 (1915). Waterproof waistcoat lined with a film of rubber. W. T. Rawlings, 59 Beaver Hall Hill, Montreal, Canada.

*4,076 (1915). Galvanic battery separator made by cutting slices from a block built up from layers of rubberized cloth, of cloth and rubber, compressed, and vulcanized. T. A. Willard, 8117 Carnegie avenue, Cleveland, Ohio.

4,084 (1915). Stocking-suspenders. J. H. B. Dawson, Foster Road, Parkeston, Essex.

*Denotes Patents for American Inventions.

Chemical Patents will be found on page 658. Machinery and Process Patents on pages 661-663.

*4,094 (1915). Spring wheel with outer rigid ring and rubber cushions. W. M. Heina, 1733 Broadway, Manhattan, N. Y.

4,146 (1915). Flexible fabric for deck-chairs, seats, hammock beds, mats, etc., built up from rings of reinforced rubber sheeting folded and interlaced. A. A. Scott, 6 Spring Gardens Road, Bradford.

4,148 (1915). Rubber nostril dilator and medicament holder. E. S. Johnson, 115 Fleet street, London.

4,151 (1915). Splash guard for automobiles, etc., comprising an india-rubber strip. P. Christiansen, 25 Vesterbrogade, Copenhagen.

4,212 (1915). Capsule for liquid comprising a rubber disk. F. A. Bouty, 3bis Rue de Dunkerque, Paris.

4,297 (1915). Locking nut for tire valves. E. Bellan, 139 Avenue de Villiers, Paris.

4,315 (1915). Combined eye-shielding device and megaphone having a covering of rubber round the rim. J. A. MacLellan, Newton Club, Newton Abbot, Devonshire.

*100,395. Wheel tire. E. H. Herrick, 35 East 30th street, New York City.

*100,397. Pneumatic tire. A. H. Harris, 342 6th street, Barberton, Ohio.

100,405. Conveyor belts formed of transverse corrugated sheet iron or aluminum laths laid on longitudinal straps of balata. C. T. Glums, Denmark.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 12, 1916.]

4,363 (1915). Armored hose. G. Mitchell, 32 Queen Victoria street, London.

4,494 (1915). Textile driving belts impregnated with rubber and balata. W. Kohlschutter; G. Rothmund and G. Rothmund & Co., 65 Bartels Strasse, Hamburg, Germany.

4,531 (1915). Twin tires and rings of rubber. S. H. Cope and Warland Dual Rim Co., Alma street, Aston, Birmingham.

4,579 (1915). Ear plug. T. N. Atkinson, 26 Hart street, Holborn, London.

4,623 (1915). Wheel tires. J. E. Howard, La Maisonette, St. Peters, Jersey, Channel Islands.

4,626 (1915). Vehicle wheels. P. H. Benjamin, 35 St. Frusquin street, Malvern, Johannesburg, South Africa.

4,693 (1915). Double-ended air tubes for tires. Dunlop Rubber Co., 14 Regent street, Westminister, and C. MacBeth, Manor Mills, Salford street, Aston, Birmingham.

4,739 (1915). Funnel for liquids made of waterproof canvas. Asiatic Petroleum Co., St. Helens Court, Gt. St. Helens, London, and H. Averay-Jones, Stone House, Fownhope, Herefordshire.

4,745 (1915). Respirators. M. Stern & Co., and S. Goldreich, 18 Ropemaker street, London.

4,761 (1915). Rubber-sheathed electric cables. British Insulated & Helsby Cables, Prescot, Lancashire, and J. Brotherton, Cable Works, Helsby, Cheshire.

4,765 (1915). Hose couplings. Electric Hose & Rubber Co., Caxton House, Westminster, and R. H. Carr, Standard Buildings, City Square, Leeds.

100,451. Rubber layers in boot heels. T. H. Robinson, 2 Grosvenor place, Carlton, Victoria, Australia.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 19, 1916.]

*4,863 (1915). Puncture repair plug. B. W. Spitler, 52 Claybourne street, Dorchester, Mass.

4,921 (1915). Spring wheel with continuous outer rigid ring and pneumatic cushions. B. O. Bergersen, 58 Rangitikei street, Palmerston North, New Zealand.

5,023 (1915). Tire tube. T. H. B. Gayner, 113 Neville street, Middle Park, Victoria, Australia, and Western Canadian Enterprises, 512 Dominion Building, Vancouver, British Columbia.

*100,500. Resilient heel, comprising a rubber lift and one or more leather lifts. A. K. Pomeroy, Williamstown, N. J.

100,518 Hose couplings. H. T. Stephens, Tahoona, Ferryside, South Wales, and C. E. Baker, 34 Blue street, Carmarthen.

11,425 (1914). Signaling buoys in which rubber-faced gripping jaws are used. M. J. L. P. Bonard, 1654 Esplanade, Montreal, Quebec, Canada.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 26, 1916.]

5,179 (1915). Rubber chin rest for violins. R. S. Williams, 145 Yonge street, Toronto, Canada.

*5,208 (1915). Containers for tobacco, tea, coffee, spices, etc., made from a blank, the edges of which are treated with rubber. J. Peterson, 50 Union Square North, New York City.

100,544. Means for securing a tread band to a tire cover. T. Duysens, 21 Gubbelstraat, and R. Hustinx, 10 Spoorweglan—both in Maastricht, Holland.

100,554 Rubber bands in banking wallets. A. Masser, 10 St. James Road, Watford.

100,571. Tire gages. H. Fairbrother, 30 Ludgate Hill, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 2, 1916.]

5,463 (1915). Pneumatic tire cover. R. L. Goold, 5 Corporation street, Birmingham.

* Denotes patents for American inventions.

NEW ZEALAND.

ISSUED JUNE 22, 1916.

36,351. Detachable rim for solid or pneumatic tires. C. A. James, Prescott Terrace, Rose Park, and F. F. Milford, Portrush Road, Toorak—both in South Australia.

36,632. Teat cup inflater tube. G. W. Gane, Normanby, and J. Hopkirk, Hawera—both in New Zealand.

37,457. Milking machine teat cups. J. Treloar, Hamilton, N. Z.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

479,637 (September 2, 1915). Elastic tire for vehicle wheels. J. Guerrero.

479,685 (September 7, 1915). Improvements in elastic-tired wheels. A. Poncera.

479,728 (September 13, 1915). Improved air tubes for pneumatic tires. A. E. Henderson.

479,735 (September 14, 1915). Pneumatic horse collar. O. F. Hurley.

479,788 (September 21, 1915). Puncture-proof elastic tire. H. E. Wolken.

479,790 (September 21, 1915). Improved wheel rims. Dadey and Sellberg.

479,804 (September 22, 1915). Improvements in detachable shoe heels. J. Drew and H. Drew.

479,821 (September 24, 1915). Pneumatic tire valves. R. Walmsley.

479,829 (September 25, 1915). Improved vehicle wheels with detachable rims. The Standard Welding Co.

TRADE-MARKS.

THE UNITED STATES.

91,726. The word VENA—light-weight rubber shoes. Mishawaka Woolen Manufacturing Co., Mishawaka, Ind.

91,742. The word MAGIC—rubber goods. Eastern Rubber Co., Philadelphia, Pa.

94,331. The word HOU-TEX—raincoats, etc. Leopold & Price, Inc., Houston, Tex.

94,340. An illustration of a hub—rubber hose reinforced with fabric. United States Rubber Co., New York City.

94,341. The word HUBMARK—rubber hose reinforced with fabric. United States Rubber Co., New York City.

94,342. The word HUB—rubber hose reinforced with fabric. United States Rubber Co., New York City.

95,224. An illustration of the words THE GRANGER SHOE, and figure of a man sharpening a scythe—leather, canvas and rubber shoes. J. P. Magenis, Boston, Mass.

95,248. The word UTILUS—rubber hose reinforced with fabric. United States Rubber Co., New Brunswick, N. J.

95,260. The words OLD COLONY—rubber belting, rubber hose, and rubber packing. G. B. Carpenter & Co., Chicago, Ill.

95,630. An illustration of a square with the word NU-TEX over a circle—shoes and slippers having fiber-rubber soles, etc. Morton Samuels, Baltimore, Md.

93,204. The words NEW ERA inclosed in an annular frame or band—rubber heels for shoes. The Goodyear Tire & Rubber Co., Akron, Ohio.

94,190. An illustration of a triangle and circle, in the center the letters C T & S, and bordering the triangle the words THE CLEVELAND TOOL & SUPPLY COMPANY—balata, rubber belting, packing, hose, etc. The Cleveland Tool & Supply Co., Cleveland, Ohio.

95,240. The word GRANITE—piston and sheet-packing consisting of rubber and fibrous material. Revere Rubber Co., Providence, R. I.

95,644. The figures 40—hot-water bottles. The Faultless Rubber Co., Ashland, Ohio.

96,168. An illustration comprising a wreath and circle and within the circle the letter S P F—shoes made of combinations of leather and rubber, etc. Sutherland Pedigo Farwell Shoe Co., St. Louis, Mo.

75,360. The word PARA-TEX—rubber aprons, rubber gloves, and rubberized rain-coats. W. MacPherson, Cambridge, Mass.

88,713. A design below the word KEYSTONE—garters, armbands, and trouser-belts. C. L. Meyer, Pittsburgh, Pa.

91,690. The word ASHER—light-weight rubber shoes. Mishawaka Woolen Manufacturing Co., Mishawaka, Ind.

93,831. The letters CC—machinery packing composed of rubber. Crane Co., Chicago, Ill.

94,859. The word MULTIBESTOS—tire-tape. Standard Woven Fabric Co., Framingham, Mass.

95,626. The word "VELVET"—inner tubes. Lee Tire & Rubber Co., Whitemarsh township, Montgomery county, Pa.

95,671. The word COMMANDER—pneumatic tires. The B. F. Goodrich Co., New York City.

95,783. The word BELLE-OF-BROADWAY—shoes made of canvas and rubber, etc. The Elbinger Shoe Manufacturing Co., Lebanon, Ohio.

93,327. The words PARA OKE; A. & A. R. Co., and 100% LINE within a circle—shoe soles and heels made of a composite material containing animal and vegetable matter. A. & A. Rubber Co., Framingham, Mass.

93,393. The word PIONEER—rubber tires, inner tubes, patches, etc. Powell Supply Co., Omaha, Nebr.

95,921. Representation of two seals—tire valves for pneumatic tires. Double Seal Tire Valve Co., New York City.

96,233. The words THE LITTLE GIANT—syringes and parts thereof. G. W. Jessup, Boston, Mass.

96,311. The word MULTIBESTOS—friction tape. Standard Woven Fabric Co., Walpole, Mass.

96,506. The word PIONEER—belts, armbands and garters. Pioneer Suspender Co., Philadelphia, Pa.

96,545. The words DREAD NOT—rubber heels. Killion Rubber Co., Boston, Mass.

96,608. The word RINEX—soles for boots and shoes. United States Rubber Co., New York City.

CANADA.

21,649. Representation of a sailing vessel across which the word "BRITANNIA" appears on a panel; above are the words MADE IN CANADA and below WARRANTED FOR ALL CLIMATES—waterproof clothing. Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.

21,661. Black tread band used with sides of contrasting color, particularly light gray or white—pneumatic tires. The B. F. Goodrich Co., New York City.

21,662. Black tread band used with sides of red or reddish color—pneumatic tires. The B. F. Goodrich Co., New York City.

THE FRENCH REPUBLIC.

23,738. The word ACCLERENE—chemical product for use in the rubber industry. Hooley Hill Rubber & Chemical Co., Limited, Stamford Road Works, Hooley Hill, near Manchester, England.

23,780. The words TALON ACHILLE—rubber heels. Hooley Hill Rubber & Chemical Co., Limited, Stamford Road Works, Hooley Hill, near Manchester, England.

23,781. The word ERDEPE—rubber heels, soles, tips and other rubber findings for footwear. Hooley Hill Rubber & Chemical Co., Limited. Stamford Road Works, Hooley Hill, near Manchester, England.

23,782. The word BUFFALO— *Same.*

23,783. The word STANDARD—*Same.*

23,784. The words DAL PAD—*Same.*

159,250. The word PARANEIGE—proofed garments. Société Pottier Frères, Paris.

159,208. The words AMERICAN COMPANY, A. V., on a turnable rubber heel—rubber heels. Alfred Verlessen, Paris.

159,250. The word VAINQUEUR—hard rubber hair combs. Société Veuve Moulard & H. Georgeau, Paris.

159,251. The words L'ANTI-BOCHE—*Same.*

159,281. The word THERMOCAPOC—rubberized and elastic fabrics and other goods. Société Industrielle et Commerciale du Kapok, Paris.

159,290. The word RADIOCAPOC—*Same.*

159,291. The word CALORCAPOC—*Same.*

159,292. The word RADIA— *Same.*

159,293. The word FORSHO— *Same.*

159,294. The word CALOR— *Same.*

159,295. The word THERMOS— *Same.*

159,362. The word MI-KA-DO—proofed wearing apparel. Arthur Dufour, Paris.

159,458. The words PLUS-QUE-PARFAIT—rubber goods for medical, surgical, hygienic and toilet purposes. Albert Eugène Fromont, Paris.

159,459. The words MATHEUS DE PARIS— *Same.*

159,460. The words MATHEUS PARISIEN— *Same.*

159,461. The words MATHEUS DE FRANCE—*Same.*

159,462. The words MATHEUS FRANCAIS— *Same.*

159,463. The words MATHEUS NATIONAL— *Same.*

159,464. The word GNATWING with a drawing of a gnat—*Same.*

159,465. The word YABON— *Same.*

159,466. The word ANANA— *Same.*

159,467. The word ABIBI— *Same.*

159,507. A label with crossed French, Belgian and English flags and the words ALLIANCE NOUVELLE DE REPRESENTATION COMMERCIAL, ANGLO-FRANCO-BELGE—miscellaneous articles of merchandise including rubber goods. Girand, Paris.

159,616. The words SEMELLE DE SANTÉ—proofed soles for footwear. Leopold Lévy, Paris.

159,639. The words L'AUTO-IMPERMÉABILISATEUR—composition for cleaning, disinfecting and waterproofing fabrics and all kinds of garments. G. Lakhovsky, Paris.

DESIGNS.

THE UNITED STATES.

49,391. Garter. M. J. Liebenstein, assignor to A. Stein & Co.—both of Chicago, Ill.

49,403. Vehicle tire. R. J. Stokes, assignor to Thermoid Rubber Co.—both of Trenton, N. J.

49,404. Vehicle tire. R. J. Stokes, assignor to Thermoid Rubber Co.—both of Trenton, N. J.

49,407. Elastic vehicle wheel. W. E. Wilson, assignor to The American Tire & Rubber Co.—both of Akron, Ohio.

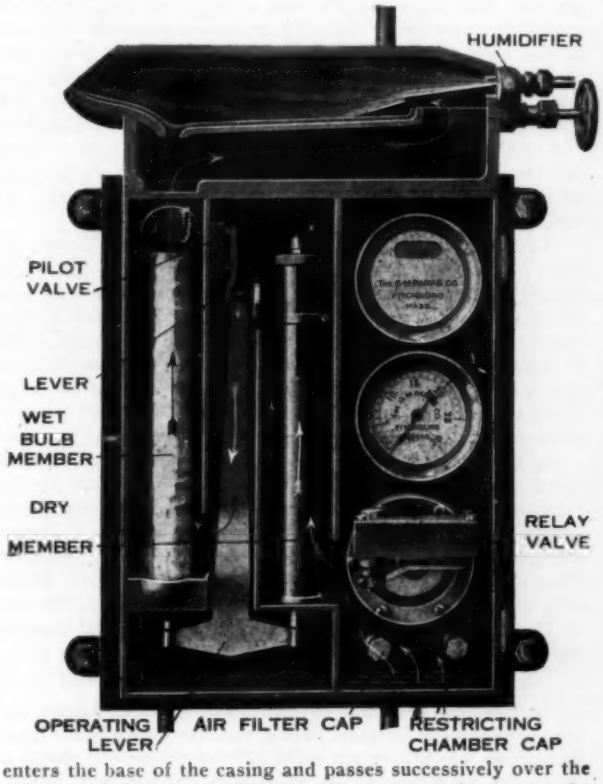
49,433. Rubber tire. C. E. Jenkins, Chicago, Ill.

49,485. Vehicle tire. M. J. Gillen, assignor to Standard Tire & Rubber Manufacturing Co.—both of Cleveland, Ohio.

PREVENTING SPREADER-ROOM FIRES.

THE spreader and churn rooms of modern rubber mills are equipped with machinery that absorbs much static electricity. When the natural humidity falls below 40 per cent, the naphtha vapors are extremely liable to become ignited by a static spark and cause a disastrous fire. An artificial humidifying instrument that will raise the moisture content of the air to the point of safety is therefore interesting, and is here illustrated. This instrument is adjustable to any desired relative humidity and is extremely sensitive.

In operation the humidifier induces an air current which



enters the base of the casing and passes successively over the dry and wet bulbs, up through the aspirator intake, to the condensation chamber.

The humidifier supersaturates this continuous sample of air, which then passes through the aspirator outlet, leaving behind it an excess of unevaporated water at the hygrometric wet bulb temperature. This water trickles down through the drip outlet upon the upper end of the wet bulb, which is surrounded by a linen mantle. The slight evaporation from this mantle due to the air current, insures the continuance of the hygrometric temperature.

The lower ends of both thermostatic members are secured to brackets, and internal rods of non-expansible metal connect their upper ends with the outer ends of the operating lever. Therefore, any change in the relative length of the two thermostatic members will slightly rock the lever, thus bringing it in or out of contact with the pilot valve lever. This pressure raises the upper end of the lever from a small pilot valve seat, permitting the escape of air from the relay valve diaphragm, which operates the humidifier valves that are attached to the overhead air and water pipes.

Air for operation is taken from any convenient main, through a special filter, and then to the frame of the instrument, whence a portion is diverted through a stop valve for the humidifier. [G. M. Parks Co Fitchburg, Massachusetts.]

Review of the Crude Rubber Market.

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NEW YORK.

AUGUST has been a very quiet month for crude rubber, a condition that was generally anticipated in the trade at this time. Extreme dullness has characterized the market, with only routine business to occupy the attention of importers and dealers. Inquiries were few and lacked the real buying tone that has apparently been absent from the New York market for some time. Plantation prices are practically the same as they were a month ago, at figures about one cent lower than the London market. The fluctuations noted in the foreign primary markets during the month have been reflected locally, but without resulting in any business to warrant further price activity.

A peculiar condition of the New York market is noticed in the fact that sales have been made at less than ruling prices, while attempts to buy on the London market at ruling prices are invariably met with one-half to one cent advance.

The feature of the month has been the continued firmness of Upriver fine and there was a noticeable scarcity of this grade toward the end of the month. The natural result of this condition has been the stiffening of prices on the other grades. Plantation rubber appears to be well supported during the period of waiting that exists in the belief that First latex at 55 cents is a near possibility. Until buying orders are placed for large quantities or some unusual disturbance occurs in the primary markets, there is small prospect of a change in the local situation.

During the first three weeks in August, 4,600 tons of crude rubber arrived in New York, compared to 3,530 tons for the same period in July. There were as follows: Plantations from London and Liverpool, 700 tons; Singapore, 950 tons; Colombo, 400 tons; Batavia, 500 tons; Para rubber from Brazil, 615 tons; Europe, 95 tons; Centrals, 380 tons; Africans, 436 tons; Manicoba, 20 tons; Guayule, 4 tons. From August 8 to 18, 500 tons of Plantation were received at Seattle, compared to 335 tons for the same period in July.

LONDON.

The unsettled condition of this market during August has been evidenced by irregular buying that has caused minor price fluctuations which have not really affected the general situation. While the American demand, Plantations best customer, remains apathetic there is not much hope for improvement. On August 1, Standard crêpe spot, was done at 2*s.* 2¼*d.* [57.27 cents] and Smoked sheet for 2*s.* 1¾*d.* [52.20 cents]. Hard fine Para spot, sold at 2*s.* 10*d.* [68.92 cents]. On August 29, Standard crêpe spot, sold for 2*s.* 3¼*d.* [55.24 cents] and Smoked sheet was done at 2*s.* 3*d.* [54.73 cents].

During July London imports were 4,553 tons, reëxports 2,800 tons. Liverpool imported in the same period 906 tons and reëxported 771 tons. Total imports for both ports were 5,459 tons, against 4,288 for July.

SINGAPORE.

At the auctions held August 4, 11, 16 and 24, about 1,350 tons were sold. First latex crêpe and smoked sheet brought an average of 50 cents a pound.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and August 30, the current date:

PARA.	Sept. 1, 1915.	Aug. 1, 1916.	Aug. 30, 1916.
Upriver, fine, new	57 @	66½@	69 @
Upriver, fine, old	58 @	.....	.....
Islands, fine, new	50½@	59 @	58 @
Islands, fine, old	52 @53	.....	.....
Upriver, coarse, new	43 @	40¾@	41½@
Upriver, coarse, old	43½@	.....	.....
Islands, coarse, new	27 @28	28½@	28 @
Islands, coarse old	.....	.....	.....
Cametá	28½@29	32 @	33 @
Caucho, ball, upper	42½@43	41 @	41½@
Caucho, ball, lower	40 @41	36 @	36 @
PLANTATION.			
First latex crêpe	Spot.. 59 @60 / Afloat 58½@59	Spot... 58 @ / Futures 58 @	56½@ / 57 @
Amber crêpe, light	.....	Spot .. 56 @ / Futures 56 @	55 @ / 55 @
Brown crêpe, clean	.....	Spot... 54 @ / Futures 52½@	52 @ / 51½@
Smoked sheet, ribbed	Spot.. 58½@59 / Afloat 58½@	Spot... 57½@ / Futures 57 @	56¼@ / 56½@
Fine sheets and biscuits, unsmoked	57 @58	.....	.....
CENTRALS.			
Corinto	40 @	41 @	39 @
Esmeralda, sausage	40 @	40 @	39 @
Nicaragua, scrap	38 @39	39 @	38 @
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	40 @41	.....	.....
Mexican, slab	.....	28 @30	.....
Manicoba	35 @40	42½@	42½@45
Mangabeira, sheet	35 @40	40 @	37½@
Guayule	32 @33	35 @	32 @33
Balata, sheet	55 @56	72½@	79 @
Balata, block	45 @47	41 @	50 @
AFRICAN.			
Lopori, ball, prime	53 @54	53 @	52 @
Lopori, strip, prime	.....	.....	52 @
Upper Congo, ball, red	51 @53	52 @	51 @
Rio Nunez Niggers	52½@53	53 @	53 @
Conakry Niggers	51 @52	53 @	52 @
Massai, red	50 @52	51 @	51 @
Soudan, Niggers	.....	.....	50 @51
Cameroon, ball, soft	44 @	.....	.....
Cameroon, ball, hard	.....	.....	.....
Benguela, No. 1	31 @	36½@	38 @
Benguela, No. 2	.....	35½@	35 @
Accra, flake	23 @23½	33 @	35 @
EAST INDIAN.			
Assam	42 @	40 @	38 @
Pontianak	6¾@ 7	8 @	6½@
Gutta Siak	12½@14	18 @19	17 @
Gutta red Niger	.....	24 @25	25 @
Borneo III	.....	.....	.....
Gutta Percha	2.00@2.50	1.50 @2.50	1.50 @2.50

COMPARATIVE NEW YORK PRICES FOR AUGUST.

Commercial paper has been moving freely this month, the best rubber names going at 4½ to 4¾ per cent, and those not so well known 5 to 5½ per cent, and some small names at 6 per cent.

	1916.*	1915.	1914.
Upriver, fine	$0.65@0.68	$0.56@0.59	$0.75@1.15
Upriver, coarse	.39@ .40	.42@ .44	.43@ .89
Islands, fine	.57@ .59	.50@ .52	.60@1.00
Islands, coarse	.27@ .28	.27@ .28	.30@ .60
Cametá	.32@ .33	.29@ .31	.32@ .61

*Figured only to August 26.

MARKET CABLE SERVICE FROM SINGAPORE.

The following reports of the weekly auctions held at Singapore have been cabled by The Waterhouse Co., Limited:

Date.	Crêpe. Price per lb.	Smoked Sheet. Price per lb.	Pounds Sold.	Market.
Aug. 4...*cents*	50.1	50.1	582,400	Slightly weaker—less demand.
Aug. 11	51.4	51.8	938,560	A general and active demand.
Aug. 16	48.8	48.8	443,520	Very dull.
Aug. 24	49.7	49.7	748,160	Steady—holders are firm.

SINGAPORE.

GUTHRIE & CO., LIMITED, report [July 6, 1916]:

The weekly auction finished to-day with a good demand but a declining tendency. Fine pale crêpe and ribbed smoked sheet sold at $120 and $119 per picul respectively. Brown crêpe and the lower grades were on the average about $4 lower than last week. There was a fair demand for scrap rubber. Of the 383 tons cataloged 325 tons found buyers.

The following was the course of values:

	In Singapore per picul.*	Sterling equivalent per pound in London.	Equivalent per pound in cents.†
Sheet, fine ribbed smoked	$118@122	2/ 4¼@2/ 5⅛	57.27@59.04
Sheet, good ribbed smoked	110@117	2/ 2⅜@2/ 4⅛	53.97@57.01
Sheet, plain smoked	108@115	2/ 2⅛@2/ 3⅝	52.95@56.00
Sheet, ribbed, unsmoked	100@106	2/ 0⅛@2/ 1¾	49.66@52.20
Sheet, plain unsmoked	104@108	2/ 1⅜@2/ 2⅛	51.43@52.95
Crêpe, fine pale	117@123	2/ 4⅛@2/ 5⅜	57.01@59.54
Crêpe, good pale	109@120	2/ 2⅜@2/ 4¾	53.46@58.28
Crêpe, fine brown	102@119	2/ 2⅛@2/ 4½	54.47@57.77
Crêpe, good brown	80@100	1/ 8¼@2/ 0½	41.05@49.66
Crêpe, dark	55@ 90	1/ 3 @1/10⅜	30.41@45.35
Crêpe, bark	40@ 80	../11⅞@1/ 8¼	23.00@41.05
Scrap, virgin	72@ 85	1/ 6⅜@1/ 9⅜	37.75@43.33
Scrap, pressed	70@ ..	1/ 6¼@.....	36.99@.....
Scrap, loose	55@ 82	1/ 3 @1/ 8⅜	30.41@41.81

*Picul = 133⅓ pounds.
†Figured at standard rate of exchange, 1s. = 24.3 cents.
Quoted in S. S. dollars = 2/4 [56.7 cents].

PLANTATION RUBBER FROM THE FAR EAST.

TOTAL EXPORTS FROM MALAYA.

(From January 1, 1916, to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	From Singapore. May 31, 1916.	From Malacca. April 30, 1916.	From Penang. May 31, 1916.	From Port Swettenham. June 30, 1916.	Totals.
United Kingdom...*lbs.*	11,664,933	1,538,534	8,955,767	11,156,968	33,316,202
The Continent	5,224,266	.....	46,667	.....	5,260,933
Japan	1,767,746	.....	.....	.....	1,767,746
Ceylon	131,961	.....	277,333	771,219	1,180,513
United States	32,984,267	.....	3,919,600	.....	36,903,867
Australia	142,314	.....	.....	.....	142,314
Totals	51,915,487	1,538,534	13,199,367	11,928,187	78,571,575
For same period, 1915	28,800,301	3,276,002	10,692,663	14,671,501	57,440,467
For same period, 1914	15,195,659	1,772,527	8,614,533	13,959,414	39,542,133
For same period, 1913	9,564,859	.....	5,863,467	13,226,350	28,654,676

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to July 17, 1915 and 1916. Compiled by the Ceylon Chamber of Commerce.)

To—	1915.	1916.
United States ...*pounds*	7,033,921	14,276,005
Canada and Newfoundland	340,140	2,240
France	223,072	854,320
Russia	332,200	248,874
United Kingdom	12,992,554	10,038,573
Australia	346,457	489,231
India	500	678
Straits Settlements	119,933	.....
Japan	208,089	159,669
Totals	21,596,866	26,069,590

(Same period 1914, 17,368,591 pounds; same period 1913, 11,741,234.) The export figures of rubber, given in the above table for 1914, include the imports re-exported. (These amount to 1,784,515 pounds from the Straits Settlements and 367,511 pounds from India.) To arrive at the total quantity of Ceylon rubber exported for that year deduct these imports from the total exports. The figures for 1915 and 1916 are for Ceylon rubber only.

FEDERATED MALAY STATES RUBBER EXPORTS.

An official cablegram from Kuala Lumpur gives the figures of the export of plantation rubber from the Federated Malay States during the month of July as 5,053 tons against 5,114 tons in June last and 3,687 tons in the corresponding month last year. The total export for seven months of the current year amounted to 32,144 tons against 22,877 tons in 1915 and 16,821 tons in 1914. Appended are the comparative statistics:

	1914.	1915.	1916.
January ...*tons*	2,542	3,473	4,471
February	2,364	3,411	5,207
March	2,418	3,418	4,429
April	2,151	2,777	3,914
May	2,069	2,708	3,956
June	2,306	3,403	5,114
July	2,971	3,687	5,053
Totals	16,821	22,877	32,144

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram from Singapore gives the figures of the export of plantation rubber from Straits Settlements ports for the month of June as 3,836 tons against 3,274 tons in May and 2,249 tons in the corresponding month last year. The total export for the six months of the current year amounted to 23,612 tons against 15,609 tons in 1915 and 8,506 tons in 1914. Appended are the comparative figures:

	1914.	1915.	1916.
January ...*tons*	1,181	2,576	4,443
February	1,703	2,741	3,359
March	1,285	2,477	4,481
April	1,548	1,978	4,219
May	1,309	3,588	3,274
June	1,480	2,249	3,836
Totals	8,506	15,609	23,612

These figures include transhipments of rubber from various places in the neighborhood of the Straits Settlements such as Borneo, Java, Sumatra and the non-Federated Malay States as well as rubber actually exported from the Colony, but *do not* include rubber exports from the Federated Malay States.

IMPORTS AND EXPORTS OF RUBBER AND GUTTA AT SINGAPORE.

IMPORTS.

June, 1916.

From—	Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Malay Peninsula—					
Port Swettenham...*pounds*	1,130,333	8,933	.....	.....	.....
Teluk Anson	806,000	.....	.....	.....	.....
Muar	543,466	.....	.....	.....	.....
Port Dickson	75,596	.....	.....	.....	.....
Kelantan	54,000	18,533	.....	.....	.....
Kuantan	32,000	.....	.....	.....	.....
Rengat	7,600	.....	.....	.....	.....
Pahang	2,666	.....	.....	.....	.....
Mersing	2,133	.....	.....	.....	.....
Totals	2,653,794	27,466	.....	.....	.....
Borneo—					
Pontianak	60,533	3,732	11,466	2,000	41,230
Sarawak	54,133	17,466	.....	7,333	614,266
Jesselton	49,733	239,066	266	2,800	.....
Sibu	37,066	.....	400	3,333	155,466
Bandjermassin	27,866	52,666	933	111,200	143,730
Labuan	27,856	1,200	133	3,600	91,066
Sambas	22,800	.....	.....	2,666	.....
Kudat	17,600	14,666	.....	.....	.....
Sandakan	16,666	30,400	.....	666	.....
Passir	1,466	.....	.....	.....	.....
Singkawang	533	.....	.....	.....	.....
Samarinda	400	.....	.....	3,600	.....
Sampit	400	.....	.....	2,000	.....
Totals	317,062	359,196	13,198	139,198	1,045,758
Sumatra—					
Djambi	207,466	.....	.....	5,466	1,333
Belawan	32,400	78,533	.....	.....	.....
Palembang	17,733	.....	2,933	.....	96,666
Deli	13,600	.....	.....	.....	.....
Indraghiri	9,466	16,400	.....	133	9,603
Asahan	4,000	24,203	.....	.....	.....
Siak	2,266	6,666	.....	.....	.....
Muntok	1,600	.....	.....	.....	.....
Bengkalis	1,166	.....	.....	4,656	.....
Port Bon	.....	.....	.....	.....	12,000
Totals	289,697	125,802	2,933	10,255	119,602
Straits Settlements—					
Penang	584,800	498,133	.....	.....	.....
Malacca	504,933	793,733	.....	.....	.....
S. Pandjang	2,000	.....	.....	.....	.....
Totals	1,091,733	1,291,866	.....	.....	.....
Java—					
Sourabaya	130,266	.....	.....	.....	.....
Batavia	78,266	.....	.....	.....	.....
Totals	208,532	.....	.....	.....	.....
Burma—					
Rangoon	6,800	.....	.....	.....	.....
Other Ports	134,133	99,333	8,266	15,733	112,800
Grand Totals	4,701,751	1,903,663	24,397	165,186	1,278,160

EXPORTS.

June, 1916.

To—	Para Rubber.	Para Rubber Transhipped.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
NORTH AMERICA:					
United States—					
New York.....*pounds*	3,802,133	859,200	.....	476,400	2,635,200
Seattle	967,333	38,266	.....	126,933	1,175,200
San Francisco	94,133	17,866	.....	.....	27,466
Akron	86,266	.....	.....	.....	.....
Boston	4,533	.....	.....	.....	.....
Canada—					
Ontario (Toronto)	66,666	.....	.....	.....	.....
Totals	5,021,064	915,332	.....	603,333	3,837,866
EUROPE:					
United Kingdom—					
England—					
London	971,200	951,066	.....	274,133	22,933
Liverpool	167,066	413,333	.....	56,400	78,133
Scotland (Glasgow)	.....	.....	.....	4,400	.....
Russia (Vladivostok)	145,200	.....	.....	.....	.....
France (Marseilles)	113,600	.....	.....	.....	.....
Italy (Genoa)	31,333	.....	.....	11,466	.....
Totals	1,428,399	1,364,399	.....	346,399	101,066
Grand Totals	6,449,463	2,279,731	.....	949,732	3,938,932

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

[The Figures Indicate Weights in Pounds.]

JULY 28.—By the steamer *Francis* from Pará and Manáos:

	Fine	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown	99,800	7,000	14,400	14,200=	135,400
Arnold & Zeiss	95,500	8,700	26,900	17,000=	148,100
H. A. Astlett & Co.	56,400	8,300	35,300	23,800=	123,800
Paul Bertuch	31,300	8,400	10,600	=	50,300
Robinson & Co.	39,100	6,600	4,000	300=	50,000
Fell & Dumont	22,800	.....	3,300	=	26,100
Henderson & Korn	1,100	.....	24,000	=	25,100
Aldens' Successors, Ltd.	400	9,500	13,000	=	22,900
G. Amsinck & Co.	5,400	700	8,400	=	14,500
Totals	351,800	49,200	139,900	55,300=	596,200

AUGUST 2.—By the steamer *Atahualpa* from Pará and Manáos:

Meyer & Brown	1,100	.....	17,900	=	19,000
Arnold & Zeiss	107,100	.....	.....	=	107,100
Henderson & Korn	300	2,200	16,700	12,500=	31,700
H. A. Astlett & Co.	21,800	.....	.....	=	21,800
G. Amsinck & Co.	1,400	.....	4,000	=	5,400
Totals	134,700	2,200	38,600	12,500=	185,000

AUGUST 2.—By the steamer *Atahualpa* from Iquitos:

Chartered Bank of Spanish America	1,000	.....	1,500	174,000=	176,500
G. Amsinck & Co.	2,500	.....	1,100	120,200=	123,800
H. A. Astlett & Co.	1,100	1,000	1,300	29,800=	33,200
W. R. Grace & Co.	3,900	400	600	7,500=	12,400
Thomsen & Co.	400	.....	300	3,300=	4,000
Totals	8,900	1,400	4,800	334,800=	349,900

AUGUST 7.—By the steamer *Acre* from Pará and Manáos:

Meyer & Brown	55,300	4,400	31,300	19,500=	110,500
Arnold & Zeiss	53,200	11,400	26,500	38,000=	129,100
H. A. Astlett & Co.	52,800	9,300	12,000	16,200=	90,300
Muller, Schall & Co.	46,600	3,000	1,700	19,200=	70,500
G. Amsinck & Co.	19,800	600	5,100	37,800=	63,300
W. R. Grace & Co.	19,700	2,100	1,900	35,100=	58,800
Henderson & Korn	19,300	.....	16,100	13,100=	48,500
Robinson & Co.	27,600	.....	.....	=	27,600
Crossman & Sielcken	100	.....	4,700	10,400=	15,200
Paul Bertuch	.....	6,000	.....	=	6,000
Pell & Dumont	.....	.....	4,000	=	4,000
Guaranty Trust Co.	21,400	.....	2,100	48,700=	72,200
Totals	315,800	36,800	105,400	238,000=	696,000

PARAS.

		Pounds.
JULY 28.—By the *Mayaro*=Ciudad Bolivar:		
Yglesias, Lobo & Co. (Fine)	50,000	
Yglesias, Lobo & Co. (Coarse)	15,000	
R. Fabien & Co. (Fine)	4,000	69,000
AUGUST 1.—By the *Ancon*=Colon:		
G. Amsinck & Co. (Fine)	33,200	
G. Amsinck & Co. (Coarse)	3,200	
Neuss, Hesslein & Co. (Fine)	1,500	37,900
AUGUST 5.—By the *Dockra*=Montevideo:		
Crossman & Sielcken (Caucho)	24,000	
A. D. Straus & Co. (Fine)	13,000	
Neuss, Hesslein & Co. (Fine)	24,000	
E. Heaney & Co. (Fine)	6,000	67,000
AUGUST 14.—By the *Crown of Galicia*=Ciudad Bolivar:		
R. Fabien & Co. (Fine)	20,000	
R. Fabien & Co. (Coarse)	10,000	
Yglesias, Lobo & Co. (Fine)	12,000	
Yglesias, Lobo & Co. (Coarse)	5,000	47,000
AUGUST 17.—By the *Cristobal*=Colon:		
G. Amsinck & Co. (Fine)	26,000	
Neuss, Hesslein & Co. (Fine)	12,000	38,000

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

JULY 22.—By the *Carrillo*=Cartagena:		
G. Amsinck & Co.	10,000	
Mecke & Co.	4,000	
Caballero & Blanco	500	14,500
JULY 22.—By the *Advance*=Colon:		
G. Amsinck & Co.	1,700	
H. Mann & Co.	800	
Piza Nephews & Co.	7,500	
Isaac Brandon & Bros.	1,800	
Fidanque Bros. & Co.	500	12,300
JULY 24.—By the *Esperanza*=Tampico:		
C. Tennant Sons & Co.		*35,000
JULY 24.—By the *Esperanza*=Mexico:		
E. Steiger & Co.	*16,000	
American Trading Co.	*2,000	
J. A. Medina & Co.	*2,000	
L. Deschamps	*500	*20,500
JULY 24.—By the *Sixaola*=Puerto Barrios:		
A. Rosenthal & Sons	2,000	
W. H. Knox & Co.	100	
J. S. Sembrada & Co.	3,000	5,100
JULY 25.—By the *Tenadores*=Bocas del Toro:		
Cowdrey & Co.	3,000	
Isaac Brandon & Bros.	1,000	4,000
JULY 26.—By the *Colon*=Colon:		
P. A. Andrade & Son	3,500	
Piza Nephews & Co.	1,200	
Pottberg, Ebeling & Co.	600	
H. Marquardt & Co.	200	5,500
JULY 27.—By the *Santa Marta*=Cartagena:		
G. Amsinck & Co.	800	
H. W. Peabody & Co.	400	1,200
AUGUST 1.—By the *Ancon*=Colon:		
G. Amsinck & Co.	5,600	
Mecke & Co.	3,000	
H. Wolff & Co.	700	9,300
AUGUST 1.—By the *Metapan*=Port Limon:		
A. A. Linde & Co.	2,000	
Isaac Brandon & Bros.	500	
G. Amsinck & Co.	300	2,800
AUGUST 1.—By the *Saramacca*=Colombia:		
A. Held		1,500
AUGUST 2.—By the *Almirante*=Cartagena:		
G. Amsinck & Co.		700
AUGUST 7.—By the *Pastores*=Port Limon:		
A. A. Linde & Co.		2,000
AUGUST 7.—By the *Tivives*=Puerto Barrios:		
A. Rosenthal & Sons		3,000
AUGUST 10.—By the *Alliance*=Colon:		
Pottberg, Ebeling & Co.	100	
Fidanque Bros. & Co.	300	
Piza Nephews & Co.	2,000	
Gontard & Co.	1,000	3,400
AUGUST 11.—By the *Zacapa*=Cartagena:		
G. Amsinck & Co.	3,000	
Hills Bros. & Co.	500	3,500
AUGUST 17.—By the *Cristobal*=Colon:		
Mecke & Co.	2,000	
Pottberg, Ebeling & Co.	2,500	
Pablo Calvet & Co.	19,000	
J. S. Sembrada & Co.	200	
Fidanque Bros. & Co.	300	
Muller, Schall & Co.	5,900	
G. Amsinck & Co.	1,600	31,500
AUGUST 21.—By the *Esperanza*=Mexico:		
Graham Hinkley & Co.	*7,000	
H. Marquardt & Co.	*1,500	
G. Schaumann & Co.	*500	*9,000
AUGUST 21.—By the *Sixaola*=Puerto Barrios:		
A. Rosenthal & Sons		3,000
AUGUST 21.—By the *Tenadores*=Port Limon:		
Isaac Brandon & Bros.	1,500	
A. A. Linde & Co.	1,500	3,000
AUGUST 23.—By the *J. G. McCullough*=Frontera:		
E. Steiger & Co.		12,500

AFRICANS.

JULY 27.—By the *Medan*=Batavia:		
Karl Schroeder	70,000	
Various	30,000	100,000
AUGUST 4.—By the *Quebra*=Liverpool:		
Goodyear Tire & Rubber Co.	11,200	
Arnold & Zeiss	6,000	17,200
AUGUST 3.—By the *Rodja*=Batavia:		
General Rubber Co.	85,000	
Karl Schroeder	40,000	
Various	15,000	140,000
AUGUST 4.—By the *Cedric*=Liverpool:		
Meyer & Brown		45,000
AUGUST 7.—By the *Orduna*=Liverpool:		
Adolph Hirsch & Co.		190,000
AUGUST 14.—By the *Queen Margaret*=Liverpool:		
Arnold & Zeiss		33,500
AUGUST 21.—By the *Vigilancia*=Lisbon:		
Various		22,500
AUGUST 22.—By the *Saxonia*=Liverpool:		
Goodyear Tire & Rubber Co.		11,200
AUGUST 22.—By the *Lord Crower*=Liverpool:		
Goodyear Tire & Rubber Co.		11,200

MANICOBA.

		Pounds.
JULY 28.—By the *Gregory*=Maranham:		
G. Amsinck & Co.		1,200
JULY 31.—By the *Rocburn*=Bahia:		
Adolph Hirsch & Co.		17,000
AUGUST 7.—By the *Acre*=Bahia:		
Adolph Hirsch & Co.	24,000	
Lawrence Johnson & Co.	17,500	41,500

PLANTATIONS.

JULY 24.—By the *Mongolia*=London:		
Meyer & Brown	6,000	
Robert Badenhop Co.	33,500	
Raw Products Co.	13,500	
Charles T. Wilson Co., Inc.	80,000	
Goodyear Tire & Rubber Co.	13,500	
F. Stern & Co.	95,000	
Rubber Trading Co.	17,000	258,500
JULY 25.—By the *Buenaventura*=Colombo:		
J. T. Johnstone & Co.	30,000	
Goodyear Tire & Rubber Co.	18,000	
Robinson & Co.	11,200	
L. Littlejohn & Co.	29,120	
Henderson & Korn	40,000	128,320
JULY 26.—By the *City of Madrid*=Colombo:		
Meyer & Brown	47,000	
L. Littlejohn & Co.	4,480	
Arnold & Zeiss	45,000	
W. H. Stiles & Co.	11,200	
J. T. Johnstone & Co.	75,000	
Goodyear Tire & Rubber Co.	38,000	
W. R. Grace & Co.	2,200	
Charles T. Wilson Co., Inc.	14,000	
Edward Maurer & Co., Inc.	4,500	241,380
JULY 27.—By the *Medan*=Batavia:		
Meyer & Brown	90,000	
General Rubber Co.	115,000	
Aldens' Successors, Ltd.	99,100	
Edward Maurer & Co., Inc.	95,000	
G. Amsinck & Co.	200,000	
Henderson & Korn	70,000	
Manhattan Rubber Manufacturing Co.	70,000	
J. T. Johnstone & Co.	5,000	
F. H. Cone	30,000	
W. R. Grace & Co.	16,000	
Stein, Hirsch & Co.	2,000	
L. Littlejohn & Co.	24,079	
Goodyear Tire & Rubber Co.	97,000	
Various	170,000	1,083,179
JULY 27.—By the *Aspinet*=Colombo:		
Meyer & Brown	85,000	
L. Littlejohn & Co.	136,500	
Arnold & Zeiss	50,000	
W. R. Grace & Co.	11,200	
Aldens' Successors, Ltd.	11,100	
Edward Maurer & Co., Inc.	35,000	
W. H. Stiles & Co.	22,500	
J. T. Johnstone & Co.	7,000	358,300
JULY 28.—By the *Valeria*=Liverpool:		
The B. F. Goodrich Co.		4,500
JULY 31.—By the *Valodia*=London:		
Meyer & Brown	22,500	
The B. F. Goodrich Co.	310,000	
L. Littlejohn & Co.	51,446	
Arnold & Zeiss	60,000	
Michelin Tire Co.	60,000	
Robinson & Co.	60,000	
J. T. Johnstone & Co.	31,000	

Charles T. Wilson Co., Inc.....	11,200	606,146

JULY 31.—By the *Indramudi*=Singapore:

Meyer & Brown.....	80,000	
Edward Maurer & Co., Inc.....	205,000	
General Rubber Co.....	560,000	
J. T. Johnstone & Co.....	500,000	
L. Littlejohn & Co.....	489,015	
Arnold & Zeiss.....	200,000	
The B. F. Goodrich Co.....	160,000	
Henderson & Korn.....	160,000	
Goodyear Tire & Rubber Co....	125,000	
Fox & Co.....	112,000	
E. J. Curry.....	22,500	
W. R. Grace & Co.....	18,000	
H. R. Jefferds.....	11,200	
Robinson & Co.....	45,000	
Aldens' Successors, Ltd.....	77,100	
Charles T. Wilson Co., Inc.....	42,500	
Rubber Trading Co.....	18,000	
Fisk Rubber Co.....	11,200	
Raw Products Co.....	7,000	2,843,515

AUGUST 1.—By the *Pannonia*=London:

Michelin Tire Co.....	56,000	
Arnold & Zeiss.....	67,000	
Charles T. Wilson Co., Inc.....	11,200	
Robinson & Co.....	9,000	
L. Littlejohn & Co.....	9,370	152,570

AUGUST 3.—By the *Alexandrian*=London:

Raw Products Co.....	56,000	
F. Stern & Co.....	9,000	
J. T. Johnstone & Co.....	8,000	73,000

AUGUST 3.—By the *Radja*=Batavia:

Meyer & Brown.....	100,000	
Edward Maurer & Co., Inc.....	290,000	
Goodyear Tire & Rubber Co....	95,000	
J. T. Johnstone & Co.....	65,000	
Manhattan Rubber Manufacturing Co.	56,000	
W. R. Grace & Co.....	30,000	
Stein, Hirsch & Co.....	30,000	
G. Amsinck & Co.....	30,000	
General Rubber Co.....	65,000	
L. Littlejohn & Co.....	79,909	
Arnold & Zeiss.....	9,000	
Rubber Trading Co.....	2,000	
Aldens' Successors, Ltd.....	4,400	
Various	150,000	1,006,309

AUGUST 5.—By the *Andania*=London:

Meyer & Brown.....	45,000	
The B. F. Goodrich Co.....	18,000	
J. T. Johnstone & Co.....	12,000	
Arnold & Zeiss.....	33,500	
Charles T. Wilson Co., Inc.....	33,500	
General Rubber Co.....	90,000	
Robinson & Co.....	80,000	
L. Littlejohn & Co.....	9,148	321,148

AUGUST 9.—By the *Minnesota*=London:

Goodyear Tire & Rubber Co....	80,000	
F. Stern & Co.....	80,000	160,000

AUGUST 12.—By the *Manchuria*=London:

Meyer & Brown.....	90,000	
Rubber Trading Co.....	11,200	
Charles T. Wilson Co., Inc.....	115,000	
F. Stern & Co.....	22,500	
G. R. Hende & Co.....	16,000	
L. Littlejohn & Co.....	62,123	
W. R. Grace & Co.....	45,000	361,823

AUGUST 15.—By the *Bloemfontein*=Singapore:

Meyer & Brown.....	7,000	
Aldens' Successors, Ltd.....	14,000	
Henderson & Korn.....	320,000	
Charles T. Wilson Co., Inc.....	4,500	
Goodyear Tire & Rubber Co....	105,000	
Robinson & Co.....	30,000	
Edward Maurer & Co., Inc.....	70,000	
J. T. Johnstone & Co.....	216,000	
L. Littlejohn & Co.....	374,482	
Arnold & Zeiss.....	205,000	
General Rubber Co.....	325,000	
The B. F. Goodrich Co.....	120,000	
Fox & Co.....	110,000	
E. J. Curry.....	25,000	1,925,982

AUGUST 15.—By the *City of Delhi*=Colombo:

Meyer & Brown.....	150,000	
L. Littlejohn & Co.....	135,520	
Goodyear Tire & Rubber Co....	54,000	
Arnold & Zeiss.....	50,000	
W. H. Stiles & Co.....	33,500	
Henderson & Korn.....	40,000	
J. T. Johnstone & Co.....	35,000	
Robinson & Co.....	9,000	507,020

AUGUST 16.—By the *Philadelphian*=London:

Rubber Trading Co.....		6,000

AUGUST 21.—By the *Michigan*=London:

Goodyear Tire & Rubber Co....	135,000	
Rubber Trading Co.....	35,000	
J. T. Johnstone & Co.....	35,000	
Raw Products Co.....	22,500	227,500

AUGUST 21.—By the *City of New Castle*=Colombo:

Meyer & Brown.....	134,000	
L. Littlejohn & Co.....	38,080	
Robinson & Co.....	11,200	
J. T. Johnstone & Co.....	70,000	
W. R. Grace & Co.....	2,000	
Edward Maurer & Co., Inc.....	25,000	
Charles T. Wilson Co., Inc.....	16,000	
W. H. Stiles & Co.....	60,000	356,280

AUGUST 22.—By the *Minnehaha*=London:

Meyer & Brown.....	11,500	
Rubber Trading Co.....	30,000	
Raw Products Co.....	30,000	
Charles T. Wilson Co., Inc.....	30,000	101,500

CRUDE RUBBER ARRIVALS AT SEATTLE.

Consignee is given first, followed by shippers.
Figured 130 pounds net to the case.

PLANTATION.

	POUNDS.	
TO SAN FRANCISCO.		
JULY 22.—By the steamer *Bankoku Maru.*		
W. R. Grace & Co.		
Damasara (Selangor) Rubber Co.	8,060	
Goodyear Tire & Rubber Co.		
Planters Stores & Agency Co., Ltd.	4,420	12,480
TO AKRON.		
AUGUST 6.—By the steamer *Ixion.*		
Firestone Tire & Rubber Co.		
The Waterhouse Co.....	90,090	
Goodyear Tire & Rubber Co.		
Harrisons & Crosfield.....	249,730	
Rubber Estates of Johore, Ltd.	60,450	
Duff Development Co.....	16,510	
Langkat Sumatra Rubber Co.	6,240	
Anglo Sumatra Rubber Co...	5,330	
Tamiang Rubber Estates.....	3,380	
Barda Sumatra Rubber Co...	2,080	
Serdang Central Plantation...	2,080	
Glen Berrie Rubber Co.....	1,690	437,580
TO NEW YORK.		
United States Rubber Co.		
General Rubber Co.....	59,930	
J. T. Johnstone & Co.		
Duff Development Co.....	7,930	
Henderson & Korn.		
Sealong Rubber Estates.....	4,290	
L. Littlejohn & Co.		
C. W. Mackie.....	119,340	
W. H. Stiles & Co.		
C. W. Mackie	83,850	
Arnold & Zeiss.		
C. W. Mackie	65,910	
Arthur Meyer & Co.		
Duff Development Co.....	8,320	
Anglo Sumatra Rubber Co...	2,860	
Robinson & Co.		
Bardar Sumatra Rubber Co..	3,380	
Serdang Central Plantation...	3,380	
F. Stern & Co.		
Kennedy & Co.....	3,250	362,441
TO SEATTLE.		
Henderson & Korn.		
East Asiatic Co.....	16,250	
Goodyear Tire & Rubber Co.		
C. W. Mackie & Co.....	105,820	
W. R. Grace & Co.		
R. T. Reid & Co.....	12,610	
Chests Carssee & Co.....	11,180	
Planters Stores & Agency Co., Ltd.	9,100	
Whitehall & Co.....	4,450	
Sandilands, Buttery & Co.....	3,640	
Cheras Rubber Co.....	2,470	
Sungei Pureen Rubber Co....	2,470	530,430
TO SAN FRANCISCO.		
AUGUST 18.—By the steamer *Shidzuoka Maru.*		
W. R. Grace & Co.		
Sandilands, Buttery & Co.....		24,960
TO SEATTLE.		
AUGUST 19.—By the steamer *Empress of Russia.*		
Goodyear Tire & Rubber Co.		
C. W. Mackie & Co.....		55,250

GUTTA JELUTONG.

TO SAN FRANCISCO.		
JULY 22.—By the steamer *Bankoku Maru.*		
Bowers Rubber Works.		
Katz Bros.		11,700

CUSTOM HOUSE STATISTICS.

PORT OF DETROIT—JUNE, 1916.

IMPORTS:	POUNDS.	VALUE.
Rubber scrap	112,463	$6,825
EXPORTS:		
Rubber scrap	7,114	$603
Reclaimed rubber	10,025	1,542
India rubber boots.....*pairs*	1,791	4,335
India rubber shoes.....*pairs*	156	219
Automobile tires	.....	1,472
Other rubber tires.....	.....	78
Belting, hose, etc.....	.....	853
All other manufactures of india rubber	.....	4,438
Total	.....	$11,395

PORT OF NEW YORK—JUNE, 1916.

IMPORTS:		
India rubber 26,427,971		$16,082,190
Balata	165,498	64,830
Gutta percha	296,415	42,686
Gutta jelutong (Pontianak).	2,389,693	121,995
Manufactures of india rubber	.....	40,509
Totals 29,279,577		$16,352,210
EXPORTS:		
India rubber	2,804	$1,582
Balata	36,800	20,000
Rubber scrap	242,679	32,997
Reclaimed rubber	41,635	6,816
Gutta jelutong (Pontianak).	56,000	2,520
India rubber boots.....*pairs*	6,076	14,078
India rubber shoes.....*pairs*	68,557	36,789
Automobile tires.....	.....	755,308
Other rubber tires.....	.....	180,134
Belting, hose, etc.....	.....	269,198
All other manufactures of india rubber	.....	$24,598
Total	.....	$1,780,105

PORT OF BOSTON—JULY, 1916.

IMPORTS:		
India rubber	112,378	$67,829
Manufactures of india rubber	.....	2,763
Rubber scrap	11,960	1,063
Totals	124,338	$71,655
EXPORTS:		
Rubber scrap	54,438	$5,377
India rubber boots.....*pairs*	20,810	41,708
India rubber shoes.....*pairs*	132,455	56,093
Automobile tires	.....	22,480
Other rubber tires.....	.....	76
Belting, hose, etc.....	.....	4,089
All other manufactures of india rubber	.....	48,434
Total	.....	$178,257

PORT OF CHICAGO—JULY, 1916.

IMPORTS:	
Manufactures of india rubber	$26

PORT OF CLEVELAND—JULY, 1916.

IMPORTS:		
India rubber	387,596	$266,975
Manufactures of india rubber	.....	1,809
Totals	387,596	$268,784

PORT OF DETROIT—JULY, 1916.

IMPORTS:		
Manufactures of india rubber	.....	$7,689
Rubber scrap	94,296	6,756
Totals	94,296	$14,445
EXPORTS:		
Rubber scrap	878	$55
Reclaimed rubber	23,830	4,206
India rubber boots.....*pairs*	2,232	5,247
India rubber shoes.....*pairs*	42	99
Automobile tires	.....	14,794
Belting, hose, etc.....	.....	1,759
All other manufactures of india rubber	.....	5,154
Total	.....	$31,314

PORT OF NEW ORLEANS—JULY, 1916.

IMPORTS:		
India rubber	16,467	$5,686

PORT OF PHILADELPHIA—JULY, 1916.

EXPORTS:		
Belting, hose, etc.....	.....	$2,317
Other manufactures of india rubber	.....	6,150
Total	.....	$8,467

IMPORTS AND EXPORTS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

IMPORTS.

Week Ending—	India Rubber. Pounds.	India Rubber. Value.	Scrap for Re-manufacture. Pounds.	Scrap for Re-manufacture. Value.	Balata. Pounds.	Balata. Value.	Gutta Percha. Pounds.	Gutta Percha. Value.	Chicle. Pounds.	Chicle. Value.
July 21, 1916	*	$4,342	.....	.....	.....	.....	.....	$22,687	.....	.....
	2,375,917	1,243,290	208,313	$13,816	60,272	$30,233	.....	.....	4,256	$1,952
July 28, 1916	*	1,552	.....	.....	.....	.....	*	6,540	.....	.....
	2,566,681	1,548,007	30,223	2,445	37,344	12,917	11,191	894	36,857	22,277
August 4, 1916	5,500,170	3,233,038	299,655	23,750	14,401	7,164	390,607	47,708	.....	.....
August 11, 1916	*	17,198	.....	.....	.....	.....	*	2,810	.....	.....
	3,606,634	2,017,219	194,535	12,851	13,973	4,542	.....	.....	.....	.....
August 18, 1916	*	1,472	.....	.....	.....	.....	*	11,560	.....	.....
	2,362,051	821,335	80,995	8,453	22,598	6,866	89,600	8,705	.....	.....

*Pounds not specified.

EXPORTS.

FIGURES ISSUED FROM JULY 25, 1916, TO AUGUST 24, 1916.

EXPORTED TO—	Belting, Hose and Packing.	Footwear. Boots.	Footwear. Shoes.	Tires. Auto.	Tires. Other.	Insulated Wire and Cables.	Other mnf. of India Rubber.	Fountain Pens.	Chewing Gum.	Reclaimed Rubber.	Scrap Rubber.
NORTH AMERICA:											
Bermuda	$223	.....	$37	$14	$140	$409	$589	$47	$143	.....	.....
British Honduras	.....	.....	.....	.....	.....	.....	32	.....	.....	.....	.....
Canada	74	.....	1,116	.....	.....	.....	903	.....	.....	.....	.....
Central American States—											
Costa Rica	445	.....	.....	358	77	116	804	.....	234	.....	.....
Guatemala	289	.....	.....	104	.....	.....	475	.....	25	.....	.....
Honduras	327	.....	.....	1,641	.....	88	95	.....	.....	.....	.....
Nicaragua	229	.....	.....	.....	.....	.....	1,953	.....	.....	.....	.....
Panama	7,177	.....	1,762	5,065	1,266	26,214	6,816	6	1,509	.....	.....
Salvador	177	.....	.....	719	.....	149	558	.....	.....	.....	.....
Mexico	2,664	.....	.....	8,996	1,460	2,415	2,676	.....	.....	.....	.....
Newfoundland	216	$1,213	10,698	1,348	17	2,871	1,556	140	4	.....	.....
West Indies—											
British—											
Barbados	29	.....	.....	694	4	30	197	.....	4		
Jamaica	1,010	3	62	21,022	718	642	1,107	3	.....	.....	.....
Trinidad and Tobago	2,456	.....	3,142	2,875	376	119	1,601	1	2	.....	.....
Other British	193	.....	30	2,105	437	661	625	4	20	.....	.....
Cuba	32,372	.....	174	113,362	139,553	14,809	36,795	836	1,394	.....	.....
Danish	.....	.....	.....	123	.....	87	25	.....	20	.....	.....
Dutch	.....	.....	.....	60	3	225	47	.....	.....	.....	.....
French	11	.....	40	299	1,211	.....	19	.....	.....	.....	.....
Haiti	356	.....	6	36	90	942	251	112	44	.....	.....
Santo Domingo	778	.....	2	1,058	90	.....	461	.....	.....	.....	.....
Totals, North America	$49,026	$1,216	$17,069	$159,879	$145,442	$49,777	$57,585	$1,149	$3,399	.....	.....
EUROPE:											
Denmark	$73	.....	$92	$125	$831	.....	$674	.....	.....	.....	.....
France	1,824	.....	11,099	15,909	42,890	$39,413	66 287	.....	$3,900	.....	$5,950
Greece	2,013	.....	.....	3,600	.....	.....	988	.....	.....	.....	.....
Italy	536	.....	3,528	14,521	12,205	3,633	14,099	$40	.....	.....	.....
Netherlands	8,165	.....	878	.....	1,012	17,495	4,703	600	.....	.....	.....
Norway	1,634	.....	.....	.....	.....	21,072	1,539	.....	260	.....	.....
Portugal	.....	.....	.....	80	.....	2,949	83	169	.....	.....	.....
Russia in Europe	255	.....	.....	.....	.....	4,467	1,830	49	.....	.....	.....
Spain	.....	.....	.....	.....	.....	58,172	70	525	.....	.....	.....
Sweden	.....	.....	.....	.....	.....	.....	385	.....	.....	.....	.....
Switzerland	.....	.....	.....	.....	.....	.....	602	.....	.....	.....	.....
United Kingdom—											
England	43,004	$800	49,343	194,188	129,793	49,480	313,524	658	28,164	$12,815	8,685
Scotland	7,980	.....	2,243	.....	572	.....	548	66	293	.....	.....
Totals, Europe	$65,484	$800	$67,183	$228,423	$187,303	$196.681	$405,332	$2,107	$32,617	$12,815	$14,635
SOUTH AMERICA:											
Argentina	$8,015	.....	$1,000	$58,621	$1,277	$14,947	$39,992	$279	$816	$678	.....
Bolivia	.....	.....	.....	.....	1,048	.....	125	.....	.....	.....	.....
Brazil	5,606	$69	594	6,890	3,772	20,439	15,133	1,042	19	.....	.....
Chile	57,153	151	285	27,835	2,430	40,111	16,252	.....	266	.....	.....
Colombia	475	.....	305	4,440	877	1,196	3,100	.....	.....	.....	.....
Ecuador	2,176	.....	.....	761	474	940	460	.....	41	.....	.....
Guiana—British	209	.....	349	27	84	152	185	.....	28	.....	.....
Dutch	.....	.....	.....	.....	3	.....	83	.....	.....	.....	.....
French	.....	.....	.....	.....	.....	.....	.....	27	.....	.....	.....
Paraguay	.....	.....	.....	35	.....	.....	.....	.....	.....	.....	.....
Peru	3,415	1,505	.....	1,530	268	4,815	4,227	.....	97	.....	.....
Uruguay	3,853	.....	239	2,578	1,067	10,208	2,848	.....	.....	.....	.....
Venezuela	1,198	.....	.....	8,368	2,177	3,141	3,534	.....	52	.....	.....
Totals, South America	$82,100	$1,725	$2,772	$111,085	$13,477	$95,949	$85,939	$1,348	$1,319	$678	.....
ASIA:											
China	$42	.....	.....	$1,287	.....	$5,974	$54	$163	.....	.....	.....
British India	1,322	.....	$123	2,024	$1,748	58	2,660	693	$344	.....	.....
Straits Settlements	43	.....	12	276	.....	.....	270	.....	.....	.....	.....
Dutch East Indies	656	.....	.....	12,356	.....	4,320	2,908	.....	.....	.....	.....
Hongkong	10	.....	.....	.....	175	.....	10	88	.....	.....	.....
Japan	515	$89	1,308	.....	39	3,885	221	.....	.....	$2,904	.....
Russia in Asia	.....	.....	.....	.....	241	.....	.....	.....	.....	.....	.....
Siam	.....	.....	.....	116	.....	.....	36	.....	.....	.....	.....
Totals, Asia	$2,588	$89	$1,443	$16,059	$2,203	$14,237	$6,159	$944	$344	$2,904	.....
OCEANIA:											
British—											
Australia and Tasmania	$95	.....	$8,428	$9,016	$2,487	$3,633	$12,156	$189	$1,868	$9,258	$963
New Zealand	1,152	.....	1,623	6,166	5,534	12,739	179,105	.....	.....	.....	.....
Philippine Islands	299	.....	8,986	6,863	512	814	4,056	.....	600	.....	.....
British Oceania	.....	.....	287	.....	.....	.....	.....	.....	.....	.....	.....
Totals, Oceania	$1,546	.....	$19,324	$22,045	$8,533	$17.186	$195,317	$189	$2,468	$9,258	$963
AFRICA:											
British Africa—											
West	$80	.....	.....	.....	.....	.....	$427	.....	.....	.....	.....
South	50.840	$237	$34	$52,281	$25,653	$3,367	9,358	.....	$291	.....	$151
East	.....	.....	.....	2,978	1,572	.....	.....	.....	.....	.....	.....
Egypt	70	.....	261	.....	.....	.....	13	$38	.....	.....	.....
French Africa	145	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Madagascar	706	.....	.....	.....	.....	.....	25	.....	.....	.....	.....
Portuguese Africa	1,856	.....	.....	.....	.....	.....	319	.....	.....	.....	.....
Totals, Africa	$53,697	$237	$295	$55,259	$27,227	$3,367	$10,142	$38	$291	.....	$151

EXPORTS OF INDIA RUBBER FROM MANAOS DURING JUNE, 1916.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Totals.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Totals.	GRAND TOTALS.
Suter & Co.....*kilos*	37,022	3,018	28,641	10,377	79,058	21,847	760	2,338	93,589	118,534	197,592
General Rubber Co. of Brazil.....	34,192	2,978	14,389	52,656	104,215	22,190	31,283	4,096	46,288	103,857	208,072
Tancredo Porto & Co.....	39,669	12,588	30,093	3,655	86,005	5,901	28,313	1,361	31,068	66,643	152,648
I. G. Araujo.....	33,015	3,903	13,717	21,542	72,177	.....	160	840	22,200	23,200	95,377
Adelbert H. Alden, Ltd.....	.....	340	1,080	.....	1,420	1,020	.....	.....	35,651	36,671	38,091
H. Balding	10,312	.....	.....	9,992	20,304	.....	.....	.....	.....	.....	20,304
Armazens Andresen	5,104	120	495	4,443	10,162	.....	.....	.....	.....	.....	10,162
G. Fradelizi	3,840	.....	.....	.....	3,840	.....	.....	.....	.....	.....	3,840
Mesquita & Co.....	.....	.....	.....	.....	.....	.....	160	400	160	720	720
Totals: June, 1916	163,154	22,947	88,415	102,665	377,181	50,958	60,676	9,035	228,956	349,625	726,806
May, 1916	430,544	69,135	142,723	280,793	923,195	28,635	29,243	17,539	198,313	273,730	1,196,925
April, 1916	334,337	48,556	168,393	377,014	928,300	212,682	50,555	35,419	252,036	550,692	1,478,992
March, 1916	502,323	76,236	228,580	320,482	1,127,621	450,320	87,029	49,033	318,648	905,030	2,032,651
February, 1916	546,003	82,739	191,537	205,419	1,025,698	164,400	27,819	56,344	119,229	367,792	1,393,490
January, 1916	561,143	110,411	176,779	148,142	996,475	543,822	58,574	75,105	123,703	801,204	1,797,679

EXPORTS OF INDIA RUBBER FROM MANAOS FROM JANUARY TO JUNE, 1916.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Suter & Co.....*kilos*	356,272	31,010	150,715	175,560	713,557	148,345	16,597	4,606	242,560	412,108	1,125,665
General Rubber Co. of Brazil....	488,985	91,206	224,469	333,563	1,138,223	227,173	112,420	25,871	275,250	640,714	1,778,937
Pralow & Co.....	365,393	43,187	116,396	91,888	616,864	317,521	25,059	62,666	153,782	559,028	1,175,892
Tancredo Porto & Co.....	270,076	89,254	143,728	142,234	645,292	177,811	100,284	40,251	105,747	424,093	1,069,385
J. G. Araujo.....	241,305	31,760	86,997	72,629	432,691	171,882	19,557	33,566	33,447	258,452	691,143
Armazens Andresen	356,758	34,034	88,086	166,315	645,193	10,404	461	2,783	91	13,739	658,932
Adelbert H. Alden, Ltd.....	208	25,878	37,938	6,055	70,079	142,247	72	19	274,320	416,658	486,737
Gaspar Almeida & Co.....	35,846	4,281	14,250	23,801	78,178	.....	.....	.....	.....	.....	78,178
Semper & Co.....	32,082	2,617	17,814	2,963	55,476	7,646	.....	40	.....	7,686	63,162
H. Balding	35,961	.....	.....	24,069	60,030	459	228	67	20	774	60,804
Simfronio & Co.....	31,202	5,159	11,898	1,101	49,360	5,140	2,827	3,065	118	11,150	60,510
José Carneiro da Motta.....	10,386	2,012	2,434	1,682	16,514	23,957	3,157	7,754	4,012	38,880	55,394
Amorim Irmãos	800	320	3,000	3,750	7,870	29,182	4,100	8,916	3,776	45,974	53,844
Ohliger & Co.....	51,874	13	20	.....	51,907	.....	.....	.....	.....	.....	51,907
Mendes & Co.....	20,320	.....	400	100	20,820	12,819	7,520	1,583	5,146	27,068	47,888
B. Lévy & Co.....	11,253	2,409	3,636	18,616	35,914	2,400	160	720	.....	3,280	39,194
M. Lobo	12,070	5,085	12,624	9,256	39,035	.....	.....	.....	.....	.....	39,035
Stowell & Sons.....	.....	.....	685	.....	685	13,567	1,126	911	18,386	33,990	34,675
Coutinho & Co.....	1,160	7,200	4,590	1,920	14,870	19,520	.....	.....	.....	19,520	34,390
G. Fradelizi	3,840	.....	.....	.....	3,840	.....	.....	.....	.....	.....	3,840
Sundries	86,929	8,160	33,961	54,683	183,733	56,767	6,872	21,933	26,359	111,931	295,664
Totals, Manaos 2,412,720	383,585	953,641	1,130,185	4,880,131	1,366,840	300,440	214,751	1,143,014	3,025,045	7,905,176
In transit, Iquitos	124,784	26,439	42,786	308,170	502,179	83,977	13,456	27,724	97,871	223,028	725,207
Totals 2,537,504	410,024	996,427	1,438,355	5,382,310	1,450,817	313,896	242,475	1,240,885	3,248,073	8,630,383

(Compiled by Suter & Co., Manaos.)

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—*free:*	May, 1916. Pounds.	Value.	Eleven Months Ending May, 1916. Pounds.	Value.
India rubber:				
From France	53,755	$40,342	478,059	$288,691
Portugal	23,847	9,196	2,768,293	1,092,494
United Kingdom	6,619,239	5,060,600	64,137,873	42,511,706
Central America and British Honduras..	127,423	61,015	1,170,689	530,313
Mexico	100,606	46,922	3,076,305	1,171,689
Brazil	4,626,075	2,191,894	50,135,881	22,786,831
Other South America	728,657	367,419	5,704,885	2,614,200
East Indies 14,246,445	10,052,657	109,307,440	64,889,041
Other countries	24,138	19,090	657,048	459,604
Totals 26,550,185	$17,849,135	237,436,473	$136,344,569
Balata	75,062	33,855	2,378,907	931,272
Guayule gum	350,520	95,409	2,509,890	789,769
Gutta jelutong	977,060	56,825	22,698,321	1,060,647
Gutta percha	499,063	32,585	2,565,667	261,983
Totals 28,451,890	$18,057,809	247,589,258	$139,388,240
Rubber scrap	1,685,286	147,887	15,643,153	1,245,456
Totals, unmanufactured...30,137,176	$18,205,696	263,232,411	$140,633,696
Chicle .....*dutiable*	523,361	$230,862	6,665,675	$2,541,846
MANUFACTURED—*dutiable:*				
Gutta percha	.....	$20,569	.....	$33,770
India rubber	.....	37,306	.....	341,573
Totals, manufactured.....	.....	$57,875	.....	$375,343
Substitutes—elasticon, etc.....	.....	$276	.....	$15,444

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—	May, 1916. Pounds.	Value.	Eleven Months Ending May, 1916. Pounds.	Value.
Automobile tires:				
To Russia in Europe*.....	.....	$8,230	.....	$1,124,500
England	.....	1,105,744	.....	8,511,709
Canada	.....	89,578	.....	1,088,856
Automobile tires:				
Mexico	.....	18,365	.....	226,039
Cuba	.....	89,731	.....	494,863
Australia	.....	190,911	.....	1,442,839
New Zealand*	.....	156,532	.....	898,149
Philippine Islands	.....	63,896	.....	355,040
Other countries	.....	278,455	.....	2,477,509
Totals	.....	$2,001,442	.....	$16,619,504
All other tires	.....	449,883	.....	2,803,548
Belting, hose and packing.....	.....	267,453	.....	2,588,858
Rubber boots .....*pairs*	27,442	66,731	688,846	1,552,468
Rubber shoes .....*pairs*	165,197	95,218	1,805,410	962,488
Scrap and old rubber.....	791,492	39,378	4,165,145	380,159
Reclaimed rubber	472,748	68,682	6,041,679	824,642
Other rubber manufactures...	.....	916,034	.....	6,492,917
Totals, manufactured.....	.....	$3,904,821	.....	$32,224,584
Fountain pens .....*number*	18,143	$11,901	188,783	$135,724

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—	May, 1916. Pounds.	Value.	Eleven Months Ending May, 1916. Pounds.	Value.
Balata	203,550	$55,381	630,111	$225,141
Guayule gum	.....	.....	18,500	7,770
Gutta jelutong	.....	.....	2,773	305
Gutta percha	.....	.....	60,023	11,446
India rubber	354,486	194,469	4,366,428	2,506,780
Rubber scrap and refuse.....	.....	.....	9,204	734
Totals, unmanufactured..	558,036	$249,850	5,087,039	$2,752,176
Chicle	.....	.....	111,638	$32,801
MANUFACTURED—				
Gutta percha	.....	.....	.....	$537
India rubber	.....	$65	.....	37,187
Totals, manufactured.....	.....	$65	.....	$37,724

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

	May, 1916.		Eleven Months Ending May, 1916.	
	Pounds.	Value.	Pounds.	Value.
To Alaska:				
Belting, hose and packing	.....	$13,094	.....	$120,496
Boots and shoes....*pairs*	10,770	33,363	68,507	179,793
Other rubber goods.....	.....	6,151	.....	35,778
Totals	.....	$52,608	.....	$336,067
To Hawaii:				
Belting, hose and packing	.....	$6,416	.....	$84,229
Automobile tires	.....	48,308	.....	489,584
Other tires	.....	11,429	.....	74,820
Other rubber goods.....	.....	9,729	.....	82,318
Totals	.....	$75,882	.....	$730,951
To Philippine Islands:				
Belting, hose and packing	.....	$4,949	.....	$56,056
Boots and shoes....*pairs*	156	309	16,873	15,005
Tires	.....	6,011	.....	368,046
Other rubber goods.....	.....	93,647	.....	238,465
Totals	.....	$104,916	.....	$677,572
To Porto Rico:				
Belting, hose and packing	.....	$3,632	.....	$38,006
Automobile tires	.....	54,528	.....	366,832
Other tires	.....	469	.....	29,909
Other rubber goods.....	.....	5,966	.....	63,591
Totals	.....	$64,595	.....	$498,338

*Not separately stated prior to January 1, 1916.

FOR QUARTER ENDING MARCH 31, 1916.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Jan. 1, to Mar. 31, 1916.	
Unmanufactured—*free*:	Pounds.	Value.
Balata, crude	766,470	$297,565
Guayule, gum.....	522,476	154,482
Gutta jelutong	4,565,523	234,865
Gutta percha, crude	584,298	64,868
India rubber, crude.....	70,675,749	43,971,771
Scrap rubber	4,252,256	326,150
Reclaimed rubber	588,785	78,047
Totals	81,955,557	$45,127,748
Manufactured—*dutiable*:		
Gutta percha .....10 per cent	.....	$2,276
India rubber .....10 per cent	.....	107,921
Druggists' sundries of rubber.....15 per cent	.....	6,230
Hard rubber .....25 per cent	.....	1,772
Substitutes, elasticon, etc.....15 per cent	.....	5,322
Totals	.....	$124,013
Chicle: Crude	752,592	$239,451
Refined	572,791	340,290
Totals	1,325,383	$579,741

RUBBER STATISTICS FOR CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	May, 1916.		Two Months Ending May, 1916.	
UNMANUFACTURED—*free*:	Pounds.	Value.	Pounds.	Value.
Rubber and gutta percha, crude caoutchouc or india rubber:				
From Great Britain	428,513	$298,172	1,070,245	$781,119
United States	355,187	217,757	780,893	499,114
Straits Settlements	.....	.....	33,849	21,607
Other countries	2,217	1,891	2,217	1,891
Totals	785,917	$517,820	1,887,204	$1,303,731
Rubber, re-covered:				
From Great Britain	18,740	$3,610	18,740	$3,610
United States	388,398	52,449	722,354	106,309
Totals	407,138	$56,059	741,094	$109,919
Hard rubber, in sheets and rods:				
From United States	1,217	$1,077	1,628	$1,400
Rubber substitute:				
From United States	59,256	$5,300	130,103	$11,354
Rubber, powdered, and rubber or gutta percha waste:				
From Great Britain	81,052	$5,274	81,052	$5,274
United States	178,217	18,819	381,569	27,512
Other countries	1,075	54	3,928	168
Totals	260,344	$24,147	466,549	$32,954
Rubber thread, not covered:				
From United States	5,014	$7,676	9,332	$14,220
Balata, crude:				
From United States	2,476	$1,797	2,476	$1,797
Chicle, crude:				
From United States	932	$324	18,988	$7,727
British Honduras	547,758	201,504	764,878	282,010
Mexico	161	90	161	90
Totals	548,851	$201,918	784,027	$289,827

	May, 1916.		Two Months Ending May, 1916.	
MANUFACTURED—*dutiable*:	General Tariff. Value.	Preferential Tariff. Value.	General Tariff. Value.	Preferential Tariff. Value.
Waterproof clothing:				
From Great Britain	$8	$26,137	$8	$49,041
United States	28,895	.....	49,419	.....
Totals	$28,903	$26,137	$49,427	$49,041
Hose, lined with rubber:				
From United States	$10,857	.....	$17,729	.....
Mats and matting:				
From Great Britain	.....	$9	.....	$9
United States	$238	.....	$991	.....
Totals	$238	$9	$991	$9
Packing:				
From Great Britain	.....	$4	.....	$4
United States	$8,700	.....	$14,164	.....
Totals	$8,700	$4	$14,164	$4
Tires of rubber for all vehicles:				
From Great Britain	$1,383	$3,423	$3,214	$4,860
United States	119,649	.....	169,881	.....
France	617	.....	617	.....
Other countries	87	.....	87	.....
Totals	$121,736	$3,423	$173,799	$4,860
*Rubber cement, and all other manufactures of india rubber and gutta percha, N. O. P.:				
From Great Britain	$595	$26,609	$914	$49,313
United States	70,653	.....	136,030	.....
Other countries	299	.....	401	.....
Totals	$71,547	$26,609	$137,354	$49,313
Hard rubber, in tubes:				
From United States	$848	.....	$923	.....
Boots and shoes:				
From Great Britain	.....	$73	.....	$493
United States	$10,607	.....	$15,618	.....
Totals	$10,607	$73	$15,618	$493
Belting:				
From Great Britain	.....	$32	.....	$234
United States	$7,150	.....	$8,005	.....
Totals	$7,150	$32	$8,005	$234
Webbing—over one inch wide:				
From Great Britain	.....	$990	.....	$1,111
United States	$22,328	.....	$35,489	.....
Totals	$22,328	$990	$35,489	$1,111

*In addition the imports of rubber cement and all manufactures of india rubber and gutta percha not otherwise provided for amounted to $58 from Great Britain and $784 from various countries for May; and $58 from Great Britain and $1,318 from various countries for the two months ending May, 1916, the values being at treaty rates.

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	May, 1916.		Two Months Ending May, 1916.	
MANUFACTURED—*dutiable*:	Produce of Canada. Value.	Re-exports of foreign goods. Value.	Produce of Canada. Value.	Re-exports of foreign goods. Value.
Belting:				
To Newfoundland	$192	.....	$631	.....
Hose:				
To Great Britain	$56,468	.....	$74,527	.....
United States	1,335	$125	1,335	$125
Newfoundland	697	.....	885	.....
Other countries	646	.....	747	.....
Totals	$59,146	$125	$77,494	$125
Boots and shoes:				
To Great Britain	$48,151	.....	$61,674	.....
United States	14	$15	20	$15
Newfoundland	1,375	.....	1,654	.....
Australia	550	.....	550	.....
New Zealand	625	.....	625	.....
Other countries	911	.....	2,248	.....
Totals	$51,626	$15	$66,771	$15
Clothing:				
To Newfoundland	$150	.....	$150	.....

MANUFACTURED—*dutiable:*	May, 1916. Product of Canada. Value.	May, 1916. Re-exports of foreign goods. Value.	Two Months Ending May, 1916. Product of Canada. Value.	Two Months Ending May, 1916. Re-exports of foreign goods. Value.
Tires:				
To Great Britain	$43,086	.....	$120,845	.....
United States	3,204	$1,102	25,080	$2,326
Newfoundland	136	.....	1,336	.....
Other countries	27,523	.....	29,262	.....
Totals	$73,949	$1,102	$176,523	$2,326
*Rubber waste:				
To Great Britain	$1,707	.....	$9,020	.....
United States	23,156	.....	38,587	.....
Totals	$24,863	.....	$47,607	.....
All other mnfs., N. O. P.:				
To Great Britain	$9,799	.....	$11,822	.....
United States	209	$950	407	$1,150
Newfoundland	116	.....	470	.....
Other countries	421	258	697	516
Totals	$10,545	$1,208	$13,396	$1,666
†Gum chicle:				
To United States	$112,819	.....	$227,679	.....

*During May 14,200 pounds of rubber waste was exported to Great Britain and 387,900 pounds to the United States; and 75,100 pounds to Great Britain and 582,000 pounds to the United States for the two months ending May, 1916.

†During May 201.561 pounds of gum chicle was exported to the United States, making a total of 382,283 pounds for the two months ending May, 1916.

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

UNMANUFACTURED—	July, 1916. Pounds.	July, 1916. Value.	Seven Months Ending July, 1916. Pounds.	Seven Months Ending July, 1916. Value.
Crude rubber:				
From Dutch East Indies	858,900	$545,399	5,756,700	$4,035,423
French West Africa	86,700	33,661	1,179,000	619,543
Gold Coast	141,000	57,941	1,102,900	451,863
Other countries in Africa	739,900	351,850	5,151,900	2,691,176
Peru	27,100	13,151	887,500	598,577
Brazil	1,092,500	621,997	15,028,700	10,070,591
British India	151,600	96,675	2,332,500	1,729,750
Straits Settlements and dependencies, including Labuan	2,832,000	1,625,952	29,217,400	21,376,552
Federated Malay States	3,891,600	2,581,472	19,979,800	14,522,603
Ceylon and dependencies	1,326,900	836,348	11,904,400	8,815,661
Other countries	285.300	182,440	1,868,800	1,305,328
Totals	11,443,500	$6,946,886	94,409,600	$66,217,067
Waste and reclaimed rubber	681,100	$153,246	3,871,100	$507,087
Gutta percha	463,800	202,054	4,235,200	1,954,546
MANUFACTURED—				
Apparel, waterproofed	.....	$1,888	.....	$40,056
Boots and shoes..*dozen pairs*	22,124	152,604	127,625	1,133,753
Insulated wire	.....	60,974	.....	376.145
Submarine cables	.....	.....	.....	30,292
Automobile tires and tubes	.....	323,491	.....	8,312,200
Motorcycle tires and tubes	.....	57,450	.....	552,860
Cycle tires and tubes	.....	22,361	.....	329,284
Tires not specified	.....	4,598	.....	32,882

EXPORTS.

MANUFACTURED—	July, 1916. Pounds.	July, 1916. Value.	Seven Months Ending July, 1916. Pounds.	Seven Months Ending July, 1916. Value.
Apparel, waterproofed:				
To France	.....	$65.921	.....	$253,660
British South Africa	.....	15.396	.....	106,259
British East Indies	.....	18,794	.....	105,744
Australia	.....	21,253	.....	178.561
New Zealand	.....	10,439	.....	112,056
Canada	.....	54,976	.....	163,417
Other countries	.....	143,419	.....	735,804
Totals	.....	$330,198	.....	$1,655,501
Boots and shoes..*dozen pairs*	11,678	$52,959	60,508	$303,599
Insulated wire	.....	182,517	.....	1,415,951
Submarine cables	.....	154,244	.....	1.234,480
Automobile tires and tubes	.....	800,780	.....	3.311,779
Motorcycle tires and tubes	.....	66,659	.....	263,684
Cycle tires and tubes	.....	296,577	.....	2,068,455
Tires not specified	.....	105.644	.....	632,997
Manufactures not specified	.....	764,896	.....	4,448,387

EXPORTS—FOREIGN AND COLONIAL.

UNMANUFACTURED—	July, 1916. Pounds.	July, 1916. Value.	Seven Months Ending July, 1916. Pounds.	Seven Months Ending July, 1916. Value.
Crude rubber:				
To Russia	562.200	$393,679	6,586,300	$4,835,569
France	1.927,500	1,172.533	11,761,200	8,786,394
United States	3,035,700	1,876 009	37.307,200	27.786,224
Other countries	1,678,900	1,090,025	11,038,500	7,753,353
Totals	7,204,300	$4,532,246	66,693,200	$49,161,540
Waste and reclaimed rubber	115,600	$20,150	397,700	$67,175
Gutta percha	12,700	6,862	291,800	155,209
MANUFACTURED—				
Apparel, waterproofed	.....	$554	.....	$1,370
Boots and shoes..*dozen pairs*	3,723	21,355	18,495	105,666
Insulated wire	.....	5,025	.....	69,065
Automobile tires and tubes	.....	346.367	.....	2,442,069
Motorcycle tires and tubes	.....	14,259	.....	53,475
Cycle tires and tubes	.....	2,858	.....	110,456
Tires not specified	.....	.....	.....	4,555

LONDON AND LIVERPOOL RUBBER STATISTICS.

IMPORTS.

JULY, 1916.

UNMANUFACTURED—	London. Pounds.	London. Value.	Liverpool. Pounds.	Liverpool. Value.
Crude rubber:				
From German West Africa	.....	.....	99,900	$36,528
Java	172,700	$105,831	.....	.....
Dutch Borneo	.....	.....	11,200	1,215
Other Dutch Possessions in Indian Seas	685,000	438,352	.....	.....
France	.....	.....	3,700	2,192
French West Africa	.....	.....	76,300	28,329
Madagascar	14,300	5,832	.....	.....
Portuguese W. Africa	.....	.....	16,800	2,187
Portuguese E. Africa	5,509	2,430	.....	.....
Spain	.....	.....	3,400	2,041
Mexico	3,600	2,349	.....	.....
Colombia	400	224	.....	.....
Peru	.....	.....	27,100	13,011
Brazil	2,200	972	1,090,300	621,025
Uruguay	.....	.....	2,200	632
Bolivia	.....	.....	26.300	13,750
Gold Coast	.....	.....	141,000	57,941
Nigeria	.....	.....	24,400	12,544
Cape of Good Hope	37,600	24,980	.....	.....
Zanzibar and Pemba	600	292	.....	.....
British East Africa	5,300	3,859	5,100	6,907
Uganda	5,100	2.678	.....	.....
Nyasaland	5,300	2,552	.....	.....
Anglo-Egyptian Sudan	5,300	3,854	.....	.....
Seychelles	500	350	.....	.....
British India	148,400	95.159	3,200	1,516
Straits Settlements	2,578.700	1,082.747	253,300	143,105
Fed. Malay States	3,885,000	2,577,598	6,600	3,873
Ceylon and Dependencies	1,305.600	816,475	21,300	19,865
British North Borneo	237,200	156,409	.....	.....
Fiji Islands	6,900	3,761	.....	.....
British Guiana	1,200	642	.....	.....
Totals	9,106,400	$5,327,346	1,812,100	$966,661
Waste and reclaimed rubber:				
From Java	7,800	$729	.....	.....
United States	57,900	11,115	53,400	$11,081
Channel Islands	2,400	194	.....	.....
Egypt	300	29	.....	.....
Malta	10.300	573	.....	.....
Cape of Good Hope	8,900	626	.....	.....
Natal	8,100	447	.....	.....
British India	33,200	2,892	.....	.....
Ceylon and Dependencies	6,800	355	.....	.....
New Zealand	12,300	510	.....	.....
British Honduras	300	117	.....	.....
Totals	148,300	$17,587	53,400	$11,081

EXPORTS.

Waste and reclaimed rubber Mnfs. of the United Kingdom:				
To Sweden	2,700	$729	.....	.....
Norway	.....	.....	14,400	$1,351
France	43.300	8,383	1.700	408
Italy	84,500	4,695	2,500	573
Spain	.....	.....	7.100	714
Japan	.....	.....	2,400	296
United States	372,200	23,448	103,000	13,559
Australia	2,200	408	.....	.....
Totals	504,900	$37,663	131,100	$16,901

RE-EXPORTS.

Crude rubber:				
To Russia	114.200	$74,037	448,000	$319,902
Sweden	118,300	66,723	11,200	6,318
Denmark	89.500	54,724	.....	.....
France	1,295,700	785.711	580,400	361,671
Switzerland	15,700	14,580	200	290
Spain	6,700	5,137	18,000	13,389
Italy	736,000	485,013	137.400	87,577
Japan	.....	.....	29 600	20,869
United States	2,920,300	1,854,369	99,700	53,416
Cuba	.....	.....	200	209
Canada	297.700	193,336	.....	.....
Australia	.....	.....	218,400	141,980
Totals	5,594,100	$3,533,630	1,543,100	$1,005,621
Waste and reclaimed rubber:				
To Sweden	7,900	$2,187	.....	.....
France	.....	.....	23,600	$5,026
Japan	.....	.....	600	83
Totals	7,900	$2,187	24,200	$5,109

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	Four Months Ending April, 1915. Pounds.	Value.	Four Months Ending April, 1916. Pounds.	Value.
India rubber and gutta percha —raw and reclaimed:				
From Straits Settlements	734,800	.....	717,640	.....
African Fr. Colony	.....	.....	28,820	.....
Belgian Congo	.....	.....	124,080	.....
Brazil	1,745,920	.....	2,274,360	.....
Other countries	61,380	.....	624,580	.....
Totals	2,542,100	$1,561,080	3,768,480	$2,314,803
Rubber scrap	308,000	$18,914	2,037,860	$125,143
MANUFACTURED—				
India rubber and gutta percha —threads:				
From United States	10,780	.....	11,660	.....
Great Britain	10,780	.....	16,280	.....
Other countries	.....	.....	660	.....
Totals	21,560	$34,043	28,600	$45,162
India rubber and gutta percha —sheets:				
Cut sheets	1,100	$1,457	440	$583
Elastic fabric	1,540	473	220	67
Insulated wire	220	52	.....	.....
Hard rubber	1,320	811	24,860	15,266
India rubber and gutta percha —tubes:				
Cut sheets	440	$656	440	$656
Elastic fabric:				
From Austria-Hungary	660	.....	.....	.....
Germany	3,080	.....	.....	.....
Other countries	22,440	.....	1,760	.....
Totals	26,180	$11,254	1,760	$756
Other forms	1,980	$955	1,540	$743
Belting	14,300	$7,527	45,540	$13,972
Rubber coated fabrics...*pieces*	28,160	$29,645	43,560	$45,857
Other forms:				
From Great Britain	4,620	.....	13,200	.....
Other countries	440	.....	440	.....
Totals	5,060	$3,329	13,640	$8,974
Boots and shoes:—*pairs*				
From United States	6,862	.....	12,575	.....
Austria-Hungary	1,531	.....	.....	.....
France	52	.....	10,061	.....
Germany	4,028	.....	.....	.....
Other countries	.....	.....	45	.....
Totals	12,473	$9,629	22,681	$17,510
Elastic webbing:				
From Austria-Hungary	4,400	.....	.....	.....
France	4,840	.....	.....	.....
Germany	20,900	.....	880	.....
Other countries	7,700	.....	9,680	.....
Totals	37,840	$53,114	10,560	$14,822
Elastic fabric—not specified:				
From Austria-Hungary	7,920	.....	.....	.....
France	5,060	.....	134,860	.....
Germany	14,300	.....	.....	.....
Great Britain	29,040	.....	45,100	.....
Other countries	1,980	.....	1,320	.....
Totals	58,300	$35,801	181,280	$111,322
Tires:				
From France	42,460	.....	206,140	.....
Germany	2,200	.....	.....	.....
Great Britain	45,760	.....	133,100	.....
Other countries	660	.....	21,340	.....
Totals	91,080	$102,916	360,580	$439,694
Other rubber manufactures:				
From Austria-Hungary	9,680	.....	.....	.....
France	3,300	.....	707,300	.....
Germany	55,880	.....	.....	.....
Great Britain	75,460	.....	246,840	.....
Other countries	22,220	.....	187,220	.....
Totals	206,540	$73,050	1,131,360	$500,642
Total Imports	.....	$1,944,708	.....	$3,655,972

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—	Four Months Ending April, 1915. Pounds.	Value.	Four Months Ending April, 1916. Pounds.	Value.
India rubber and gutta percha —raw and reclaimed	144,540	$32,334	388,740	$92,753
MANUFACTURED—				
India rubber and gutta percha —threads:				
To Germany	5,720	.....	.....	.....
Great Britain	.....	.....	1,760	.....
Argentina	1,100	.....	2,420	.....
Other countries	18,260	.....	8,360	.....
Totals	25,080	$39,604	12,540	$19,802
India rubber and gutta percha —sheets:				
Cut sheets	3,740	$4,954	2,200	$2,914
Elastic fabric	1,540	473	.....	.....
Insulated wire	1,100	260	.....	.....
Hard rubber	19,800	12,159	34,100	20,940
India rubber and gutta percha —tubes:				
Cut sheets	.....	.....	7,260	$10,827
Elastic fabric	$2,140	$22,413	25,520	10,970
Other forms	21,780	10,509	38,940	18,788
Belting	660	347	1,540	811
Elastic webbing:				
To France	660	.....	1,540	.....
Greece	18,040	.....	22,220	.....
Egypt	1,100	.....	6,600	.....
Argentina	15,180	.....	34,320	.....
Brazil	25,520	.....	22,000	.....
Cuba	14,300	.....	7,040	.....
Other countries	16,720	.....	41,800	.....
Totals	91,520	$128,461	135,520	$190,221
Elastic fabric—not specified:				
To Spain	660	.....	440	.....
Argentina	1,540	.....	7,920	.....
Brazil	.....	.....	220	.....
Uruguay	1,100	.....	1,760	.....
Other countries	2,200	.....	5,940	.....
Totals	5,500	$8,685	16,280	$25,708
Tires:				
To France	.....	.....	87,560	.....
Great Britain	.....	.....	2,465,980	.....
Switzerland	208,560	.....	66,008	.....
India and Ceylon	45,320	.....	218,680	.....
Australia	12,320	.....	43,780	.....
Argentina	259,820	.....	350,240	.....
Brazil	118,800	.....	157,520	.....
Other countries	1,574,100	.....	134,200	.....
Totals	2,218,920	$2,705,780	3,523,960	$4,163,014
Other rubber manufactures:				
To Great Britain	.....	.....	21,340	.....
Switzerland	62,040	.....	4,180	.....
Argentina	30,800	.....	34,760	.....
Other countries	158,840	.....	77,440	.....
Totals	251,680	$101,762	137,720	$85,096
Total exports	.....	$3,067,741	.....	$4,641,844

THE RUBBER SCRAP MARKET.

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NEW YORK.

AUGUST is usually a dull month in the rubber scrap market and with the exception of deliveries on contracts there has been but little business to claim attention from the trade. The easy tendency noted a month ago has continued without change for the better, resulting in a heavy market with downward tendencies. Crude rubber continues to be weak and, in fact, the rubber trade in general has been apathetic towards all markets at this time. Price changes have been unimportant and at the close of the month the market was decidedly weak.

BOOTS AND SHOES. It is reported that supplies are not abundant and that spring collections have been absorbed. During the month, sales are said to have been made to the mills for 8⅜ cents, but 8½ cents is generally considered the outside price.

AUTO TIRES. Tires have continued weak and some concessions in price have been noticed during the month. G. & G. white tires were offered at prices ranging from 8 to 8¼ cents delivered, but the mills have not appeared interested. The other grades are unchanged in price and easy in tone.

INNER TUBES. There has been no interest shown in inner tubes, as the manufacturers are apparently well supplied. For No. 1 tubes the delivered price is held nominally at 24½ to 25 cents with buying confined to small lots. Compounds are slow and weak.

MECHANICALS. In mechanical scrap some grades are stagnant and prices generally weak.

LONDON AND LIVERPOOL STATISTICS.

During July 74 tons of waste and reclaimed rubber were imported into London and 252 tons exported during the same period. Liverpool's imports were 26 tons and 65 tons exported.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

AUGUST 30, 1916.

Prices subject to change without notice.

	Per Pound.		
Boots and shoes	$0.08½	@	.08⅝
Trimmed arctics	.06¾	@	.06⅞
White tires, Goodrich and Goodyear	.08	@	.08⅛
Auto tires, standard white	.05⅞	@	.06⅛
standard mixed	.05⅛	@	.06⅛
stripped, unguaranteed	.04¼	@	.04⅜
Auto peelings, No. 1	.09½	@	.09⅝
No. 2	.08	@	.08¼
Inner tubes, No. 1	.25	@	.25½
No. 2	.11	@	.11½
red	.11	@	.11½
Irony tires	.02	@	.02⅛
Bicycle tires	.04⅛	@	.04¼
Solid tires	.05	@	.05⅛
White scrap, No. 1	.13¾	@	.14¼
No. 2	.10	@	.10½
Red scrap, No. 1	.10	@	.11
No. 2	.08	@	.09
Mixed black scrap, No. 1	.04	@	.04¼
No. 2	.03¾	@	.03⅞
Rubber car springs	.04	@	.04½
Horse shoe pads	.04½	@	.04⅝
Matting and packings	.00⅞	@	.01
Garden hose	.01⅜	@	.01½
Air brake hose	.05⅛	@	.05¼
Cotton fire hose	.02½	@	.02⅝
Large hose	.01½	@	
Hard rubber scrap, No. 1, bright fracture	.24	@	.25
Battery jars (black compound)	.02½	@	.02⅝
Insulated wire stripping	.03	@	.03½
Rubber heels	.03¼	@	.03⅜

THE MARKET FOR COTTON AND OTHER FABRICS.

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NEW YORK.

COTTON has had the most sensational price advance during the latter part of August that has occurred at any time for the past 30 years, with the exception of the Sully boom of 1903 and the bull movement led by Patten six years ago, when prices went to 16 cents.

In this recent movement prices advanced 150 points within a week, and on August 25, September contracts, representing the beginning of the new crop movement, went to 15.66, October 15.75, December 15.89, January 15.95, March 16.09, May 16.20 and July deliveries 16.26.

The principal cause of this spectacular advance was the fear of crop shortage that has gradually developed during the past month, due to drouth conditions and low crop reports recently issued by the Agricultural Bureau at Washington. The apprehension is that this season's crop will be cut down to 12,000,000 bales against 14,000,000 bales that represented the world's spinners' consumption for last year.

SEA ISLAND COTTON. According to the U. S. Census Bureau the Sea Island crop for the year 1915-16 amounted to 91,920 bales distributed as follows: Georgia, 57,572; Florida, 28,170; South Carolina, 6,178. The commercial crop report figures for 1915-16 are 85,278 bales distributed as follows: South Carolina, 6,211; Georgia and Florida, 79,067. A difference of 6,642 bales is noted in these reports which cannot be definitely accounted for; however, it is known that this year's crop is some 6,000 bales in excess of last year.

EGYPTIAN COTTON. The Alexandria market has been characterized by weakness with scarcely a change in the new or old crop positions. Advices dated July 27 indicate entire absence of buying orders from abroad and a consequent stagnant market. The weather has favored new crop conditions, with the result that the plant has developed too rapidly at this time; however, the coming months of August and September are looked forward to with more anxiety as the plant development at that time is most important.

The recent rise in American cotton has resulted in prices advancing rapidly and the closing of the Egyptian Cotton Exchange.

COTTON FABRICS. The fundamentals that have controlled the cotton fabric situation for the past month are the same, and, moreover, the same market deductions are applied in tire fabrics, hose and belting duck, and textiles generally used in the rubber trade. The general demand both at home and abroad for all sorts of rubber textiles continues unabated. The textile mills have made extensive plant additions, ordered new equipment, increased the running time and arranged night shifts to take care of the business. Theoretically, production should now equal the demand, but practically it does not, for the labor is not obtainable. For that reason looms are idle, night shifts incomplete and machinery builders unable to make delivery of new equipment.

Following the sensational advance of cotton, prices of cotton fabrics advanced rapidly, and the mills withdrew all old quotations and refused to quote prices at the present time. Under the prevailing circumstances the fabric market is most unfavorable for both seller and buyer, the former threatened by labor and a short crop, and the latter by higher prices.

NEW YORK QUOTATIONS.

AUGUST 28, 1916.

Prices subject to change without notice.

Aeroplane and Balloon Fabrics:				
Wamsutta, S. A. I. L. No. 1, 40-inch	*yard*	$0.26	@	
No. 4, 38½-inch		.26	@	
O/X B. 36-inch		.13	@	
Wool Stockinettes—52-inch:				
A—14-ounce	*yard*	1.25	@	
B—14-ounce		1.50	@	
C—14-ounce		1.75	@	
Cotton Stockinettes—52-inch:				
D—14-ounce	*yard*	.50	@	.55
E—11½-ounce		.42	@	.50
F—14-ounce		.55	@	.60
G— 8-ounce		.48	@	.50
H—11-ounce		.50	@	.55
I — 9-ounce		.42	@	.45
Colors—white, black, blue, brown.				
Tire Fabrics:				
17¼-ounce Sea Island, combed	*square yard*	.90	@	
17¼-ounce Egyptian, combed		.75	@	
17¼-ounce Egyptian, carded		.72	@	
17¼-ounce Peelers, carded		.52	@	
Sheeting:				
40-inch 2.35-yard	*yard*	.11	@	
40-inch 2.50-yard		.10½	@	
40-inch 2.70-yard		.10	@	
40-inch 2.85-yard		.09¼	@	
40-inch 3.15-yard		.09	@	
Osnaburgs:				
40-inch 2.25-yard	*yard*	.12½	@	
40-inch 2.48-yard		.11½	@	
37½-in. 2.42-yard		.11¾	@	
Mechanical Ducks:				
Hose	*pound*	.29	@	.30
Belting		.29	@	.30
Carriage Cloth Duck:				
38-inch 2.00-yard enameling duck	*yard*	.15	@	.16
38-inch 1.74-yard		.17	@	.17¼
72-inch 16.66-ounce		.35	@	.36
72-inch 17.21-ounce		.36	@	.37
Drills:				
38-inch 2.00-yard	*yard*	.14½	@	
40-inch 2.47-yard		.11¾	@	
52-inch 1.90-yard		.16	@	
52-inch 1.95-yard		.15¾	@	
60-inch 1.52-yard		.21	@	
Yarns:				
Garden Hose, 12/2 cabled	*pound*	.33	@	.34
Fire Hose 12/1		.30	@	
Imported Woolen Fabrics Specially Prepared for Rubberizing—Plain and Fancies:				
63-inch, 3¼ to 7½ ounces	*square yard*	.38	@	1.55
36-inch, 2¾ to 5 ounces		.35	@	.85
Imported Plaid Lining (Union and Cotton):				
63-inch, 2 to 4 ounces	*square yard*	.35	@	.75
36-inch, 2 to 4 ounces		.20	@	.45
Domestic Worsted Fabrics:				
36-inch, 4½ to 8 ounces	*square yard*	.25	@	.45
Domestic Woven Plain Linings (Cotton):				
36-inch, 3¾ to 5 ounces	*square yard*	.15½	@	.20
Raincoat Cloth (Cotton):				
Bombazine	*yard*	.06	@	.08
Twills		.10	@	.15
Tweed		.20	@	.35
Tweed, printed		.06	@	.15
Plaid		.08	@	.10
Repp		.18½	@	.25
Burlaps:				
32—7½-ounce	*100 yards*	6.30	@	
40—7½-ounce		6.65	@	
40—8-ounce		6.75	@	
40—10-ounce		8.10	@	
40—10½-ounce		8.30	@	
45—7½-ounce		7.85	@	
45— 8-ounce		8.00	@	
48—10-ounce		11.30	@	

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

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NEW YORK.

IT was generally known that the mills had anticipated their summer requirements to the extent of laying in sufficient stocks or arranging for contract deliveries covering August and September so that the extreme dullness in rubber chemicals for the past month was expected. Very little change has been noted in local market conditions and prices, and unless something now unforeseen should occur there is not much movement expected for the next six weeks.

The Department of Commerce, Bureau of Census, has issued the following figures on the production for 1914 of various compounding ingredients, most of which show an increase in value during the period between 1909-1914.

Ingredients.	1914. Pounds.	1914. Value.	Per Cent. of Value Increase (+) or Decrease (—) 1909-1914.
Bone black	44,509,000	$1,532,000	+43.1
Carbon black	22,623,000	900,000	+44
Lampblack	.....	517,167	+17.6
Barytes	46,920,380	325,922	— 6.5
Lithopone	48,972,062	1,857,510	.....
Chrome yellow	5,747,317	641,534	.....
Prussian blue	1,239,382	387,077	.....
Ultramarine	2,698,639	222,769	.....
Vermilion (true)	322,759	200,134	+86.2

ANTIMONY SULPHURETS. There has been no change in prices or market conditions controlling this commodity. The domestic producers of both crimson and golden antimony are apparently meeting the requirements of the trade.

BARYTES. The foreign demand has continued and domestic consumption appears to be larger than normal. Prices have undergone no change, but are firm despite the fact that production of barytes has increased materially in this country during the past year.

LITHARGE. There has been no change in the fundamentals controlling this commodity which has been generally firm, and sellers are inclined to predict higher prices for that reason; however, values remain the same and the mills appear to be uninterested.

LITHOPONE. Foreign grades have been freely quoted during the month and domestic business has been confined principally to contract deliveries. In some cases forward sales have been reported covering the balance of the year, yet some producers are said to be in a position to make spot deliveries.

SULPHURIC ACID. The call has been steady and prices unchanged. Liberal offerings for spot and futures reflect the activity of the producers who are striving to meet the increasing demand at home and abroad.

WHITING. The market is still dominated by the high price of chalk and is routine in character. The demand is good and contract deliveries are regularly made, although a few producers are having difficulty in obtaining supplies of the raw material.

NEW YORK QUOTATIONS.

AUGUST 29, 1916.

Subject to change without notice.

Acetone (drums)	lb.	$0.39 @
Acid, acetic, 28 per cent. (bbls.)	lb.	.05¼ @ .05½
cresylic (crude)	gal.	.80 @
glacial, 99 per cent (carboys)	lb.	.34 @
muriatic, 20 degrees	lb.	.02 @
nitric, 36 degrees	lb.	.06 @
sulphuric, 60 degrees	lb.	.01 @
Alumina Pigment, No. 1 (sacks)	ton	16.00 @
Aluminum Flake (carloads)	ton	22.00 @
Ammonium carbonate	lb.	.09½ @ .10½
Antimony, crimson, sulphuret of (casks)	lb.	.65 @ .70
crimson, "Mephisto" (casks)	lb.	.70 @
golden, sulphuret of (casks)	lb.	.35 @
golden, "Mephisto"	lb.	.40 @
golden, sulphuret, States brand, 16-17 per cent.	lb.	.35 @
Asbestine	ton	20.00 @
Asbestos	ton	15.00 @35.00
Asphaltum "G" Brilliant	lb.	.03½ @
Barium sulphate, precipitated	lb.	.03 @ .05½
Barytes, pure white	ton	30.00 @35.00
off color	ton	20.00 @
Basofor	lb.	.07 @
Benzol, pure	gal.	.70 @ .75
Beta-Naphthol	lb.	1.25 @ 1.50
Black Hypo	lb.	.45 @ .75
Bone ash	lb.	None
black	lb.	.04 @ .08
Cadmium tri-sulphate (f. o. b. London)	lb.	2.75 @
yellow		None
Cantella gum	lb.	.27½ @ .35
Carbon, bisulphide (drums)	lb.	.08 @
black (cases)	lb.	.20 @
tetrachloride (drums)	lb.	.18 @ .20
Caustic soda, 76 per cent	lb.	.03½ @ .04
Chalk, precipitated, extra light	lb.	.04½ @ .05¼
precipitated, heavy	lb.	.04 @ .05
China clay, domestic	lb.	.12 @ .15
imported	lb.	.18 @ .38
Chrome, green (pure)	lb.	.85 @
yellow	lb.	.30 @
Coal tar	bbl.	4.50 @
Corn oil, refined	cwt.	9.36 @
Cotton linters	lb.	None
Fossil flour	lb.	.02 @
Gas black	lb.	.14 @ .20
Gilsonite	ton	37.50 @45.00
Glycerine, C. P. (drums)	lb.	.36 @
Graphite, flake (400 pound bbl.)	lb.	.20 @
powdered (400 pound bbl.)	lb.	.07 @
Green oxide of chromium (casks)	lb.	.75 @
Ground glass (fine)	bbl.	.02½ @
Indian red, reduced grades	lb.	.03¼ @ .06½
pure	lb.	.07 @ .10
Infusorial earth, powdered	ton	35.00 @
bolted	ton	60.00 @
Iron oxide, red, reduced grades	lb.	.03½ @ .09
red, pure, bright	lb.	.08 @ .08½
Ivory, black	lb.	.16 @ .30
Lampblack	lb.	.05 @ .07
Lead, red oxide of	lb.	.09¼ @ .10
sublimed blue	lb.	.08¼ @
sublimed white	lb.	.08¼ @
white, basic carbonate	lb.	.08¼ @
white, basic sulphate	lb.	.08¼ @
Lime, flour	lb.	.01 @ .01½
Litharge	lb.	.09¼ @
English	lb.	.10 @ .11
sublimed	lb.	Nominal
Lithopone, domestic	lb.	.09 @ .11
Imported	lb.	.13 @
Magnesia, carbonate	lb.	.19 @ .22
calcined, heavy	lb.	.60 @ .70
heavy, Thistle Brand	lb.	.13 @
light	lb.	.60 @ .70
Magnesite, calcined, powdered	ton	35.00 @39.00
Mica, powdered	lb.	.04 @ .06
Mineral rubber	lb.	.01¼ @ .03½
"M. R. X."	ton	100.00 @
"Genasco"	ton	36.50 @
"L. M. R."	ton	50.00 @
"Richmond Brand"	lb.	.03 @
"No. 64 Brand"	ton	35.00 @
Naphtha, stove gasolene (steel bbls.)	gal.	.23 @
66@68 degrees "	gal.	.28 @
68@70 degrees "	gal.	.29 @
V. M. & P "	gal.	.22 @
Oil, aniline	lb.	.40 @
linseed (bbl.)	gal.	.75 @
palm	gal.	.13½ @ .14
paraffin	gal.	.17 @
pine (cases)	gal.	.58 @
rapeseed	gal.	1.00 @ 1.05
rosin, heavy body	gal.	.37 @
tar (cases)	gal.	.19½ @
soluble aniline colors, yellow, orange, red, violet, blue, green	lb.	.10 @ .75
Orange mineral, domestic	lb.	.12 @
Paragol (carloads)	cwt.	8.39 @
Petrolatum	lb.	.04½ @
Petroleum grease	lb.	.04½ @
Pine solvent		None
Pine tar	bbl.	7.50 @
Pitch, burgundy	lb.	.04 @ .05
pine	lb.	.02 @
Plaster of paris	lb.	1.50 @ 1.70
Prussian blue	lb.	1.50 @ 2.00
Pumice stone, powdered (bbls.)	lb.	.03 @ .04
Resin, Pontianak, refined	lb.	.20 @
granulated	lb.	.18 @
fused	lb.	.15 @
Rosin (280 pound bbls.)	bbl.	6.60 @
Rotten stone, powdered	lb.	.02½ @ .04
Rubber black	lb.	.06 @
Rubber substitute, black	lb.	.08 @ .10
white	lb.	.12 @ .17
brown	lb.	.12 @ .17
Rubhide		Nominal
Shellac, fine orange	lb.	.34 @ .36
Soapstone, powdered	ton	12.00 @
Starch, corn, powdered	lb.	.02¼ @ .02½
Sulphur chloride (drums)	lb.	.08 @
Sulphur, flour, velvet, Brooklyn brand (carloads)	cwt.	2.15 @
Talc, American	ton	12.00 @15.00
French	ton	30.00 @35.00
Toluol, pure	gal.	4.50 @ 4.75
Tripolite earth, powdered	ton	35.00 @
bolted	ton	60.00 @
Turpentine, pure gum spirits	gal.	.44 @ .46
wood	gal.	.40 @
Venice	gal.	.11 @ .12
Ultramarine blue	lb.	.12 @ .50
Vermilion, brilliant	lb.	1.00 @ 1.25
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6427

Solve your power problems electrically

Wax, beeswax, white	lb.	.40	@	.50	gilders	cwt.	.85	@ 1.00
ceresin, white	lb.	.14	@	.16	Paris, white, American	cwt.	.95	@ 1.00
carnauba	lb.	.26	@	.35	English cliffstone	cwt.	1.25	@ 1.50
ozokerite, black	lb.	.50	@		Wood pulp XXX (carloads)	ton	Nominal	
green	lb.	.80	@	.90	Yellow ochre (Satin)	lb.	.02½	@
montan	lb.	.28	@	.30	india rubber	lb.	1.00	@
paraffin, refined, 118/120 m. p. (cases)	lb.	.06½	@		Zinc oxide, American process, horsehead brand			
123/125 m. p. (cases)	lb.	.07	@		"special"	f. o. b. factory	lb.	.10½ @
128/130 m. p. (cases)	lb.	.08	@		"XX red"	f. o. b. factory	lb.	10 @
133/136 m. p. (cases)	lb.	.09½	@	.12	French process, green seal,	f. o. b. factory	lb.	.16¾ @
crude, white, 117/119 m. p. (bbls.)	lb.	.05	@		red seal	f. o. b. factory	lb.	.16½ @
yellow, 124/126 m. p. (bbls.)	lb.	.05¼	@		white seal	f. o. b. factory	lb.	.17½ @ .2
Whiting, Alba	cwt.	.60	@	.70	Zinc substitutes		lb.	.01¾ @
commercial	cwt.	.75	@	1.00	Zinc sulphide, pure		lb.	.15 @

COMPARATIVE NEW YORK PRICES OF IMPORTANT RUBBER COMPOUNDING INGREDIENTS.

FROM AUGUST, 1914, TO AUGUST, 1916.†

PIGMENTS.

	1916. August.	1916. July.	1916. April.	1916. January.	1915. October.	1915. July.	1915. April.	1915. January.	1914. August.
White lead, basic carbonate, American, dry, lb.	8¾ @—	8¾ @—	8¾ @—	6¼ @—	5¾ @—	6¾ @—	5¼ @ 5½	5 @ 5¼	5¼ @ 5¾
basic sulphate	8¾ @—	8¾ @—	8¾ @—	6 @—	5½ @—	6½ @—	5 @ 5¼	4¾ @ 5	5 @ 5¼
Litharge, American, powdered	9¼ @—	9¼ @—	9¼ @—	6½ @—	6 @—	7 @—	5¾ @ 5¾	5 @ 5¼	5½ @ 5¾
English glassmakers'	10 @11	10 @11	10 @11	10 @11	10 @11	10 @11	10 @11	9½ @ 9¾	9½ @ 9¾
Lithopone	9 @10	14½ @15½	14½ @15½	6¾ @ 7	5¾ @ 6¼	5¾ @ 6	4¾ @ 4¾	3¾ @ 4½	3¾ @ 4½
Red lead, American	9¾ @—	9¾ @—	9¾ @—	7¼ @—	6½ @—	7½ @—	6 @ 6½	5½ @ 6	6 @ 6¼
foreign	12 @14	12 @14	12 @14	9 @10	9 @10	9 @10	9 @10	8½ @ 9	8½ @ 9
English glassmakers'	12 @14	12 @14	12 @14	9 @10	9 @10	9 @10	9 @10	8½ @ 9	8½ @ 9
Orange mineral, American	12 @12½	12 @12½	12 @12½	9 @—	8¾ @—	9¾ @—	7¾ @ 8¾	7¾ @ 8¾	7½ @ 8½
English	—@—	—@—	—@—	10 @13	10 @13	10 @13	10 @13	10 @13	10 @13
French	16 @18	16 @18	16 @18	15 @16	15 @16	15 @16	12¾ @13	12¾ @13	12¾ @13
German	*12 @13	*12 @13	*12 @13	12 @13	12 @13	12 @13	12 @13	12 @13	12 @13
Zinc oxide, white—									
German (French process)									
red seal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	6¾ @—
green seal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	7¾ @—
white seal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	8½ @—
French, red seal	16 @18	16 @18	26 @26½	Nominal	Nominal	Nominal	Nominal	Nominal	8¾ @—
green seal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal	10½ @—
American process	9¾ @ 9⅞	9¾ @ 9⅞	8⅝ @ 8⅞	8⅝ @ 8⅞	7¾ @ 8¼	7¾ @ 8½	5¾ @—	5¾ @—	5½ @—
French process, red seal	16 @16¾	16 @16¾	24 @24½	16 @—	30 @—	25 @—	10½ @—	7 @—	6½ @—
green seal	16½ @16¾	16½ @16¾	24½ @24¾	16½ @—	30½ @—	25½ @—	10¾ @—	7½ @—	7 @—
white seal	17 @17½	17 @17½	25 @25¼	17 @—	31 @—	26 @—	11⅛ @—	8 @—	7½ @—
Barytes, prime white, foreign, per ton	40.00@—	40.00@—	24.00@26.00	19.00@23.00	19.00@23.00	19.00@23.00	19.00@22.00	19.00@23.00	19.00@23.00
domestic, prime white or floated, f. o. b. works	30.00@38.00	30.00@38.00	18.00@21.00	16.00@20.00	16.00@20.00	16.25@17.00	17.00@18.00	17.00@18.00	17.00@18.00
off color, f. o. b. works	25.00@28.00	25.00@28.00	15.00@16.00	12.50@14.00	12.50@14.00	12.50@14.00	13.00@15.00	13.00@15.00	13.00@15.00
Blanc fixe, bulk, original casks, 1,000 lbs. each per ton.	120.00@—	120.00@—	70.00@—	45.00@	45.00@—	45.00@—	40.00@43.00	40.00@43.00	40.00@43.00
dry (in bbls. of 600 lbs.)	4½ @—	6 @ 7	4 @—	4 @—	3 @ 3¼	3 @ 3¼	3⅞ @ 4	3⅞ @ 4	3⅞ @ 4

DRY COLORS.

BLACK—									
Bone, lb.	4 @ 8	4 @ 8	3½ @ 7	2¼ @ 5	2¼ @ 5	2¼ @ 5	2¼ @ 5	2¼ @ 5	2¼ @ 5
Drop	7 @12	7 @12	6 @12	5 @ 8	5 @ 8	5 @ 8	5 @ 8	5 @ 8	5 @ 8
Ivory	16 @30	16 @30	10 @24	8 @12	8 @12	8 @12	8 @12	8 @12	8 @12
Carbon gas	14 @20	14 @20	*10 @12	5½ @ 6½	5½ @ 6½	5½ @ 6½	4 @ 6	4 @ 6	3½ @ 6
Lampblack	12 @18	12 @18	*14 @18	5½ @15	4 @ 8	4 @ 8	3 @ 7	3 @ 7	3 @ 7
BLUES—									
Celestial, lb.	20 @30	20 @30	22 @25	18 @20	18 @20	18 @20	Nominal	Nominal	4 @ 6
Chinese	1.50@ 2.00	1.80@ 2.50	2.00@ 2.25	Nominal	Nominal	Nominal	Nominal	Nominal	28 @30
Prussian	1.50@ 2.00	1.80@ 2.25	2.00@ 2.25	1.50@—	1.10@ 1.15	95 @ 1.05	46 @48	46 @48	26 @28
Prussian, foreign	—@—	—@—	—@—	—@—	—@—	—@—	—@—	—@—	32 @36
Soluble	1.50@ 2.00	1.80@ 2.25	2.25@—	1.50@—	1.15@ 1.25	85 @90	50 @55	50 @55	27 @29
Ultramarine	10 @40	10 @40	7 @30	5 @22	4 @22	4 @22	3½ @13	3½ @13	3½ @13
BROWNS—									
Sienna, Italian, burnt and powdered, lb.	6 @ 8	6 @ 8	5 @ 7	5 @ 7	5 @ 7	5 @ 7	4 @ 7	4 @ 5	4 @ 7
raw, powdered	4 @ 6	4 @ 6	5 @ 8	5 @ 8	5 @ 8	5 @ 8	4 @ 7	4 @ 7	4 @ 7
American, burnt and powdered	2 @ 3	2 @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3
raw	2½ @ 3	2½ @ 3	2½ @ 3	2½ @ 3	2½ @ 3	2½ @ 3	2½ @ 3	2½ @ 3	2½ @ 3
Spanish brown, ton	16.00@20.00	16.00@20.00	10.00@20.00	10.00@20.00	10.00@20.00	10.00@20.00	10.00@20.00	10.00@20.00	10.00@20.00
Umber, Turkey, burnt and powdered	4 @ 5	4 @ 5	3 @ 4	3 @ 4	3 @ 4	3 @ 4	3 @ 3½	3 @ 3½	3 @ 3½
raw and powdered	3 @ 3½	3 @ 3½	3 @ 3½	3 @ 3½	3 @ 3½	3 @ 3½	2½ @ 3	2½ @ 3	2½ @ 3
American burnt	2 @ 2½	2 @ 2½	2 @ 2½	2 @ 2½	2 @ 2½	2 @ 2½	2 @ 2½	2 @ 2½	2 @ 2½
raw	2 @ 2½	2 @ 2½	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3	2¼ @ 3
Vandyke brown	*10 @—	*10 @—	*10 @—	3 @ 4	3 @ 4	3 @ 4	2½ @ 3	2½ @ 3	2½ @ 3
soluble	*10 @—	*10 @—	*10 @—	3½ @ 4	3½ @ 4	3½ @ 4	2¾ @ 3½	2¾ @ 3½	2¾ @ 3½
GREENS—									
Chrome, chemically pure, lb.	50 @60	55 @75	80 @85	30 @40	23 @32	26 @30	22 @30	22 @30	17 @25
grinders'	18 @22	23 @28	23 @28	16 @—	12 @—	8 @12	6 @10	6 @10	6 @10
jobbing	15 @18	18 @23	20 @25	10 @—	8 @10	6 @ 8	4½ @ 5½	4½ @ 5½	4½ @ 5½
common	10 @15	13 @18	18 @20	7 @ 9	5 @ 7	5 @ 7	3½ @ 5	3½ @ 5	3½ @ 5
REDS—									
Carmine, No. 40, bulk, lb.	4.50@ 5.00	5.00@ 6.50	5.00@ 6.50	3.50@ 3.75	3.50@ 3.75	3.50@ 3.75	3.50@ 3.75	3.50@ 3.75	2.50@ 2.75
Crocus martus	3 @ 5	3 @ 5	3 @ 4½	1.55@ 3.50	1.55@ 3.50	1.55@ 3.50	1.55@ 3.50	1.55@ 3.50	1.55@ 3.50
Indian red, standard	5 @ 6	5 @ 6	5 @ 6	2.50@ 5.00	2.50@ 5.00	1.50@ 5.00	1.50@ 5.00	1.50@ 5.00	1.50@ 1.60
Rose pink	40 @45	30 @45	28 @40	22 @30	22 @30	16 @24	8 @12	8 @12	8 @10½
Tuscan red	20 @30	20 @30	20 @26	10 @18	10 @18	7 @15	4 @12	4 @12	7 @10
Venetian red	2 @ 2¼	2 @ 2¼	2 @ 2¼	75 @ 2.00	75 @ 2.00	75 @ 2.00	75 @ 1.75	75 @ 1.75	1.15@ 1.75
Oxide, red	3 @ 8½	2 @ 8½	3 @ 8½	2½ @ 9	2½ @ 9	2½ @ 9	2 @10	2 @10	2¼ @10
Para, pure (toners)	2.75@ 3.25	2.75@ 3.25	*2.50@ 3.00	Nominal	Nominal	1.15@ 1.65	80 @ 1.00	80 @ 1.00	60 @70
commercial	50 @75	50 @75	55 @75	16 @70	16 @70	16 @70	7 @45	7 @45	7 @45
Vermilion, English	1.50@ 1.60	1.50@ 1.60	*3.00@ 3.50	1.75@—	1.40@ 1.50	1.20@—	—@—	—@—	55 @59
Chinese	95 @ 1.00	95 @ 1.00	95 @ 1.00	95 @ 1.00	95 @ 1.00	95 @ 1.00	90 @ 1.00	90 @ 1.00	90 @ 1.00
YELLOWS—									
Chrome, chemically pure, lb.	30 @35	40 @65	40 @58	13 @17	12 @16	12½ @14	10¾ @12	10¾ @12	10¾ @12
Ocher, French	2½ @ 3	2½ @ 3	2½ @ 3	2 @ 2¼	2 @ 2¼	2 @ 2¼	1¾ @ 2¼	1¾ @ 2¼	1¾ @ 2¼
foreign, golden	4¾ @ 5½	4¾ @ 5½	4½ @ 5¼	3 @ 4	3 @ 4	3 @ 4	3 @ 4	3 @ 4	3 @ 4
domestic, ton	20.00@30.00	20.00@30.00	18.00@26.00	14.00@20.00	14.00@20.00	14.00@20.00	12.00@16.00	12.00@16.00	12.00@16.00
golden, lb.	6 @ 8	6 @ 8	5 @ 6	4 @ 5	4 @ 5	4 @ 5	4 @ 5	4 @ 5	4 @ 5

*Nominal.
†Compiled by the Oil Paint & Drug Reporter.

INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC GUTTA-PERCHA

Vol. 54 SEPTEMBER 1, 1916 No. 6

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REMARKABLE TIRE RECORD.

The record run, 5 days 18 hours and 22 minutes, recently made from New York to San Francisco by S. B. Stevens, under the auspices of the American Defence Society, to try out the possibilities of the automobile in time of war, was accomplished on Silvertown tires. The distance between New York and Omaha, 1,485 miles, was made in 48 hours without tire trouble. The same set of tires were used as far as Cheyenne, about 450 miles farther, where they were changed as a matter of precaution. According to Mr. Stevens, they exhibited but little signs of wear on his arrival at San Francisco.

In the manufacture of garters in Great Britain, the webbings and threads are made there, but practically all of the metal clip ends are imported from the United States. Previous to the war many French garters were imported into England, but that trade has now almost entirely ceased.